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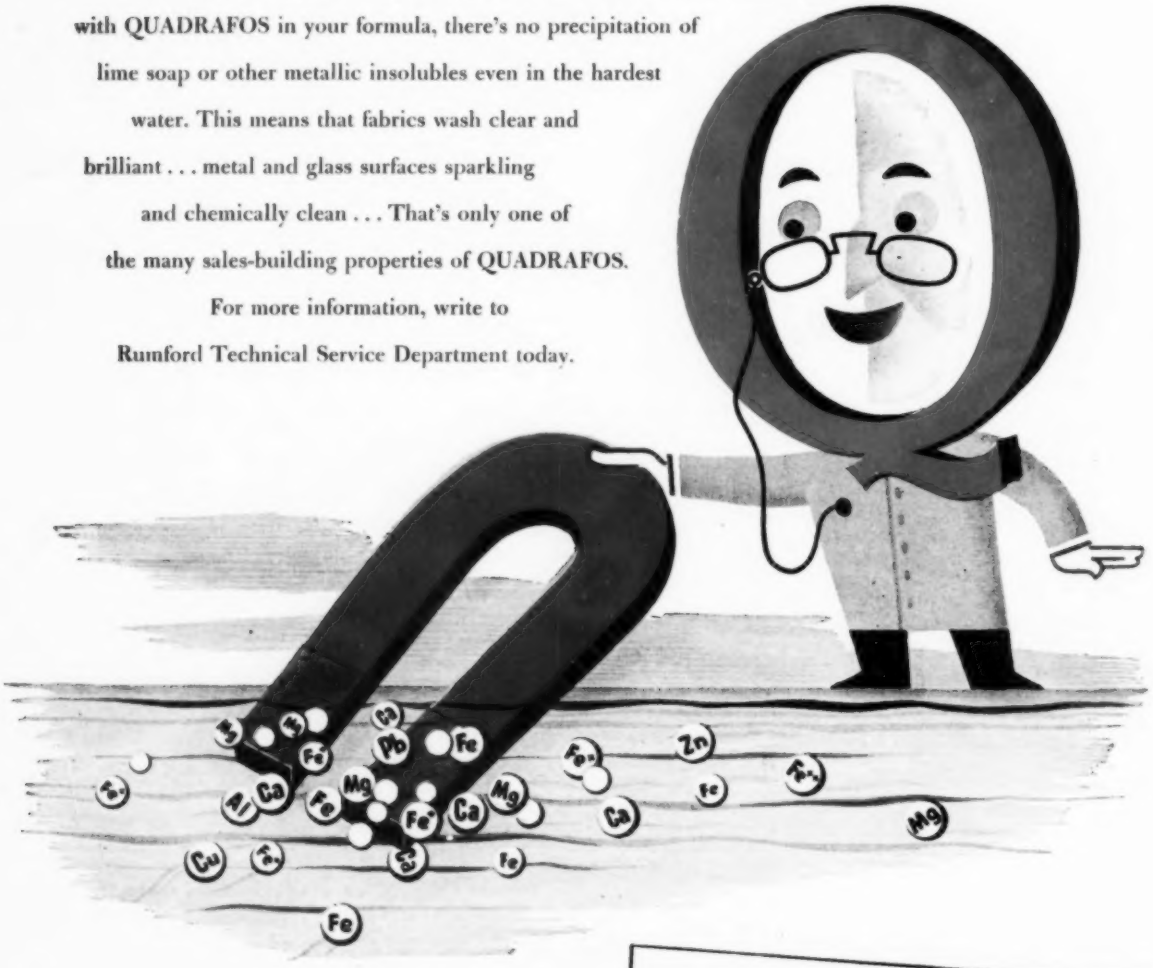

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AS THE EDITOR SEES IT

PRICE reductions have held the center of the stage in the soap industry during recent weeks. Following the request of President Truman late last month for a general cut in prices, a number of prominent soap manufacturers announced ten per cent reductions in packaged soaps. In the meantime, tallow had toppled from its lofty pinnacle, dropping over one-third from its record high price, and it is difficult to know whether the soap price cuts came mostly as a result of the presidential request or the tallow break. Nevertheless, the decline in fats and oils succeeded in bringing a neatly scrambled soap market price situation down upon the head of the industry.

The several sharp breaks in the price of tallow during April came at a time when large tonnages of fats and oils were rolling to most soapers,—all materials purchased in the excitement of the former record high prices. These materials now reaching soapers' plants were bought anywhere from thirty to forty per cent above the current market. The aftermath of what appeared to be an old-fashioned dog fight among most large soapers to buy all the tallow in sight now appears to have reached the aspirin stage. The bubble burst a lot sooner than we,—and others too apparently,—thought it would.

Although lower soap prices may mark the first steps toward a return to something akin to a normal market, there is still little stability in soap prices or markets, and there is not likely to be until stability returns to the oil and fat markets. As long as the world fat and oil supply is juggled hither and yon as a result of international agreements born of political expediency, just so long will there be uncertainty and instability. And American fat and oil users will continue to get it in the neck. Whether the market is rigged legally through political manipulation or panic buying, or illegally by collusion, the eventual effect on fat consumers is much the same. They pay through the nose. Until all international pools, government agreements, restrictions, allocations and the like are ended, the basic causes of the current dangerous and uneconomic fat and oil situation will stay with us,—and no soaper will know from one week to the next what his prices are likely to be.

NOW comes the big test! With tallow and other fats being pumped to the kettle at about twenty-five cents per pound, and the current tallow market about one-third less than this, at what price do manufacturers sell soap? This is the big $64 question in the soap industry today,—but we will give six-two-and-even that we can answer it correctly. All we do is look back over the record of the industry for the past twenty-five years and there is the answer. Soapers have always just about broken their necks to cut prices following a drop in the fat market and there is nothing which we have seen over recent years that leads us to believe that they will not do it again.

Raw material costs? Labor costs? High-priced inventories? What are all these? Just so much stuff! Hasn't the tallow market taken a sharp drop? And doesn't the competition plan to cut prices in line with replacement costs, and sneak out and grab off the business? So what can we do? And down go the prices. Same old music. Same old words. Same old song of the same old soap industry which by the time these words are being read will probably be chanted from coast to coast.

Many times over the years, we have wondered why soapers have such complete and complex cost systems. When the chips are down and the old fat market recedes and leaves them stranded, costs are usually ignored in the heat of competi-

tion anyway. When the going gets really tough, who gives a damn about costs? And thus it goes on down through the years with monotonous regularity. If it isn't happening now, then we have lived to see the first miracle in the soap industry.

CURRENTLY, the Bureau of the Census is planning a census of soap and detergent manufacture. From Washington reports, it would seem that the Bureau has been told that it would be a good idea to bulk soaps and synthetic organic detergents in a single group in the next soap census. As the story goes, there might be some difficulty for certain manufacturers who sell soap-detergent mixtures in separating out their figures. By throwing all the figures into a single pot, the whole problem would be greatly simplified. And, also, we might add, the figures would be meaningless.

The industry as a whole is deeply interested, and especially right now, in knowing just where the total tonnage of synthetic organic detergents stands in relation to soap production. Any attempt to muddy the waters and hide the facts through trick grouping arouses the suspicion which such action deserves,—that somebody is interested in hiding the figures. If the Census Law is no good, it should be repealed, but as long as we have it, circumvention by trickery should not be permitted. Figures for synthetic organic detergents should be gathered and classified separately from soap products.

AS the rate of inventory turn-over gradually slows down, many firms in the janitor supply and allied lines, it is noted, are inclined to stop all purchasing. Where a check-up shows that total inventories have grown appreciably, distributors and dealers too often do not analyze the situation to determine if this is a general condition throughout their line or is confined chiefly to certain items or groups of items. The inclination to quit buying and concentrate on reducing inventories is only natural. However, where certain parts of the line are permitted to run out of stock in the process, the action defeats its very purpose. Where sales are lost for some materials because stocks are depleted, the effect is to reduce total volume and boost overhead. Far better is a balanced inventory while the reduction in overstocked items is undertaken.

Reports from several sectors in the janitor supply trade indicate that many firms are in the process of cutting down inventories, and to speed up the process, some have put an over-all ban on buying. If they intend to stay in business, this looks like a rather shortsighted policy to us. Such sales as they may lose because of depleted stocks of some items represent business definitely lost. And we cannot see that this will do anything else but tend to retard inventory reduction of overstacked items. We feel that the answer is greater selectivity and greater caution in buying, and not a cessation of all buying as has been noted in numerous instances.

ADVERTISING allowances by manufacturers to retailers, usually the larger chains, have again come under fire. The National Association of Retail Grocers has long been on record as opposed to these allowances for local advertising space. More recently, the president of Safeway Stores came out strongly against the practice and expressed a desire to see them eliminated.

That these so-called advertising allowances have been the foundation of many abuses for years is no secret. They have been used as clubs on manufacturers chiefly by larger buyers as an effective means to obtain cut prices. In fact, they have been more a subterfuge to cut prices than an actual allowance to buy local advertising space. With keener competition in the soap industry again looming on the horizon, the old pre-war pressure for allowances may be resumed in all its glory. Now might be a good time to chant their requiem. If they ever had any usefulness, they certainly seem to have outlived it.

BRITISH SOAP INDUSTRY

British Soapers are still faced with many of their war-time restrictions

Visiting technical man points out contrasts in British soap-making practice

DURING the war years we were largely cut off from communication with other parts of the world, but in the two years since the end of the war, and particularly within the past few months, the normal interchange of industrial information has been resumed. American industrialists have once more been able to travel to Europe, and European industrialists have been rather active in visiting the United States to check up on technical developments here. This resumption of normal intercourse has served to bring us up to date on changes in soap making practice abroad, and to inform European soap makers on developments in the industry here since the pre-war days.

During the war, the American soapmaker was confronted with many difficulties of supply, transportation, price control, manpower and the like, but his problems paled somewhat by comparison with the situation that confronted the British soapmaker during the war, many features of which are still with him. Contrary to the belief of some, British soap plants did not suffer widespread bombing damage, although some damage was suffered in isolated instances. British curtailment of raw material supplies, however, was much more severe than in the United States. Complete governmental control of the use of oil and fats for soapmaking was adopted in England, and this allocation system is still in effect. Up until recently, however, we have not had much detailed information on these British allocation controls, and the recent interchange of ideas will prove enlightening.

In war time, the British made considerable use of acidulated soap stocks and their technology in using such material may now be further advanced than that of the Americans. They used up to 15 per cent and 20 per cent of palm oil fatty acids in some of their household soap products. Considerable amounts of groundnut oil (peanut oil) from India have reached the British soap market in the form of foots from the caustic refining of oil intended for edible use. The foots were split with acid and the neutral oil and fatty acids found their way to the soap kettle. The British soaper saw little or no coconut oil and had to depend largely on palm kernel oil from West Africa for his supplies of high lauric acid oils.

In former years, corn oil had been imported from the United States and had been used to quite a degree in England in the making of soft soaps. A little more of this corn oil is now finding its way to England. Considerable use is made in England of palm oil, but very little cottonseed oil is used in English soaps. The use of hardened oils is not as great in England as in the United States. Tall oil has not been available to the British because of price reasons, but high quality tall oils from Europe and particularly from Sweden may soon find their way into the British market.

Little use has been made of naphtha in soaps by the British. However, their use of rosin appears to be more widespread throughout the industry than is the case in America. In fact, it is quite common practice in England to use a certain percentage of high grade rosin even in quality soap products. Such use of rosin is well known to the American soaper. The addition of rosin increases the rate of solubility of high titre soaps and causes soap to lather freely, and as such it

makes possible the production of soap from some fats that would otherwise be unfit for such use. In toilet soaps, rosin may act as a perfume fixative, but it has certain disadvantages in being susceptible to oxidation.

Rosins modified by polymerization and dehydrogenation are very resistant to oxidation, and when used as a replacement for part of the fat stock in soap are even better than ordinary rosins for furthering its solubility. Modified rosins, although not of value in increasing detergency, were used to a considerable extent by the British as an ideal extender for their fatty oils which were in short supply. It is said that a strikingly large percentage (up to 50%) of a modified rosin can be incorporated into a soap stock without a serious lowering of the detergent value. Previous to the war, England's rosin sources were the United States and France. During the past eight years no rosin was supplied by France and only in the past year have small allocations of rosin arrived from the United States.

Before the war, bar soaps were as popular in England as were soap powders in the United States, although there were a number of excellent flake and granule products on the British market. The British soap makers are tending now to produce more of these soap powders, and as the use of home washing machines becomes more prevalent, and the supply of efficient soap "builders" eases, this tendency should increase. In regard to "builders," phosphates have not been available to the British soapers in any quantity since before the war. Tetra sodium pyro phosphate was not generally used in England before the war and none of it yet appears to be available. During the war the British people used a soap powder of about 40% fatty acid content and "built" with soda ash. Such products are reported to be still in use. Very little soap was made in England by the cold process even before the war, and since glycerine is an essential raw material in high demand in England as well as in the United States, every effort is naturally made to recover it.

One finds the Englishman's interest in shaving preparations running more toward the use of shaving sticks, which are a much more popular item on the British market than they are in the United States. The production of shaving sticks, however, had received its greatest restriction from the short supply of stearic acid, an important ingredient in the British sticks. Like the American, however, the Englishman prefers the lather type shaving cream to brushless cream. There are a number of brushless type shaving creams on the British market, but the number is smaller than on the American market. There have been no "tubed" soap products in England since before the war. Shampoos of the "sulfated lauryl" type were on the British market before the war, but are in short supply at present. The market is still apparently untouched by "creme shampoos" but it seems quite plausible that as soon as the British can import some of the ingredients of these products and make substitutions for others, the "creme shampoo" craze will appear in Britain in much the same manner and for much the same reasons that it did in the United States.

IT might be timely at this point in our discussion to mention some observations on the differences in American and British soapmaking practices that came to us recently through a discussion with Dr. G. A. Mittler, technical manager, Peter Lunt and Company, Aintree, Liverpool, England, who several months ago visited a number of soap plants in the United States on a technical mission for his company. Dr. Mittler emphasized that wherever he went he was treated with great courtesy and found American soap manufacturers as well as the equipment makers a cooperative group who were in general quite willing to show him much more than he had expected of their latest designs and innovations.

Although he found soap-making methods essentially the same in the United States as in England, Dr. Mittler noted a few differences. He found American soapers tending more now to cover their kettles and states that such practice is not widely in use in England, although it offers certain advantages. There are two systems used for covering kettles; one makes use of a cone-shaped cover and the other employs a flat cover. In both systems, large openings are provided for introduction of solid salt, closed windows are provided for observation during a boil; and lights are provided inside the kettles for better observation. Such a system reduces heat loss and prevents steam from escaping into the kettle house and overheating of the kettle house by radiated heat. He points out that another advantage in covering kettles is that it slows down the tendency for the top layer of soap in the kettle to overcool.

Dr. Mittler noted a few other differences between American and British soap-making practices. The British generally use taller and heavier frames, 5 feet, 10 inches or so in height and handling from 1100 to 1500 pounds of soap per frame. Such frames are more difficult to transport than the 3½ feet high frames used extensively in the United States, but they do provide some advantages as they are handled in England. They save floor space, for example. It is the practice in certain British installations to allow these frames to remain stationary until after the soap is cool and solid, thus avoiding mechanical disturbance of the soap during the period it is in the liquid state. Instead of seeing five or six frames at one time being hauled around the frame room by an electric truck as is often the case in America, in England one might see a system of wooden shutes extending down the frame room between the rows of frames and provided with an arrangement of side shutes for simultaneous filling of the frames on both sides of the main duct. In England, Dr. Mittler points out, more frequent use is made of mobile cutting and slabbing machines, particularly where the larger and heavier frames are in vogue. Pressing practice, he finds, is much the same in England as in the U. S.: a well known and excellent press used in America is also marketed by a British firm and is used quite universally there.

Dr. Mittler mentions a few other observations he has made regarding American soap-making practice. He notes a greater use in the United States

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ALGINATES

Their Use as Emulsifiers and Thickeners in Soaps and Cosmetics

By Nicholas J. Federici
United States Testing Co.

ALGINATES have been used in the food and technical industries for some time but it is only recently that they have entered into the cosmetic and toilet goods field as raw materials. Algin is useful wherever gums are used, and because of its superior colloid properties as an emulsifier and suspending agent, it can replace the old standby emulsifiers such as tragacanth, acacia and other gums.

Commercial algin is obtained from a species of sea weed or kelp, which is a marine algae, found abundantly on the Pacific Coast of the United States. The kelp, known as *Macrocystis pyrifera*, proliferates on rocky structures and exists predominantly on exposed coasts in depths of water from 6 to 10 fathoms. It grows in the form of stipes or stalks ranging in diameter from ½" to ¾". The stalk attaches itself to the rocks by means of a hold-fast consisting of a cluster of strong outgrowths. The stalk bears a long leaf-like expansion known as a blade. The giant kelp have been known to grow in large beds to a length of 100 to 1000 feet. Since this plant is a perennial and grows rapidly, the beds may be collected several times a year with no danger of destroying their perpetuation. The kelp reproduce by zoospores developed in one cell sporangia that are formed in large patches upon the blades. A conjugation of these zoospores in pairs result, indicating a method of sexual reproduction.

Alginates or algins are classified as the water soluble salts of alginic acid. The term is more appropriately used to indicate sodium alginate, the sodium salt of alginic acid. It is derived from the brown marine algae and is characterized as being a hydrophilic colloidal polysaccharide. This component is extracted from the algae by treament with an alkali and subsequently purified to meet the requirements for its proper usage.

Sodium alginate* is soluble in either cold or hot water and the resultant viscosity is dependent on the amount of algin employed. The alginates are unique in that when their solutions are boiled, they do not coagulate, and when cooled they do not gel. Alkalies and salts of the alkali metals do not cause any degree of precipitation. The addition of other salts, such as iron, calcium, barium, copper, lead, etc., results in the formation of insoluble alginates, which can be solubilized by the addition of a strong solution of ammonia. However, when the solutions are dried, the alginates again revert to the insoluble type. Since algins are organic in nature and resemble gums, pectins and gelatins, it is advisable to add a preservative to prevent bacterial decomposition.

The cosmetic field has much need for alginates in many preparations such as lotions, greaseless creams and tooth pastes, where a water-soluble colloid is required. Cosmeticians further differentiate emulsions as being "true emulsions" or "plain emulsions." True emulsions are those preparations which have incorporated in them a sufficient quantity of water to give the product a milky appearance. Plain emulsions are those which have the property of changing when in contact with water into a milky solution. The milky appearance is due to the fat globules held in a state of fine suspension by emulsifying agents.

Alginates serve their purpose as satisfactory emulsifiers because of their high colloid property. The emulsified cosmetic preparations are preferable to soap in some respects because they contain, not only substances which have a cleansing effect like soap, but, at the same time, render the skin clear, more transparent and more supple. There is a definite trend in cosmetics to eliminate the unctuous creams and lotions, replacing them with emulsified products. These emulsified products would dispose of the undesirable greasiness, facilitate better blending of the ingredients and, at the same time, the preparations could be removed easily with water.

IN the textile field, alginates have acted as "strengtheners" of threads employed in fine weaving. Prior to the use of alginates, the strength of the fine threads was bolstered with glues, fine threads of cotton and acetate rayon threads. The removal of these aids was accomplished by appropriate solvents or carbonization of cotton material. The involved and inefficient manner in which these aids were removed made them quite unsatisfactory and time consuming. The alginates have proven to possess defi-

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*Edit. Note: Sodium alginate is the salt of the polymerized *d*-mannuronic acid (alginic acid). Properties of alginates depend somewhat on the source of the algin, varying between the following limits: pH, 5 to 10; moisture, 5 to 20%; particle size, 10 to 200 mesh; color, white to dark brown. The material is sold in wooden barrels and fiber drums and comes in refined (food) and technical (commercial) grades. Some of the technical grades may contain some cellulose and be unbleachable. Sodium alginate is also used as an ingredient in boiler-water treatment compounds.

Propose New Specification for DISHWASHING COMPOUND

CONSIDERABLE attention has been given of late to the problem of formulating, evaluating and standardizing dishwashing detergents suitable for use with the many different types of mechanical dishwashers now on the market both for home and for industrial use. In the April issue of *Soap and Sanitary Chemicals,* the subject of evaluating dishwashing detergents was discussed by Walter D. Tiedeman, New York State Department of Health, who pointed out the need for a reliable performance test for determining the detergent action of such products. Some guidance toward better formulation of such products will also be offered in an article "Dishwashing Detergents" by Milton Lesser, scheduled for our June issue.

The disclosure of a newly proposed Federal specification for a dishwashing compound particularly suited to mechanical dishwashing machines of the spray type is quite timely and will offer direction to the efforts of those in the industry who are anxious to offer a product that will meet an accepted standard. The new specification, when officially promulgated, will supersede that part of Federal Specification P-D-236, dated November 18, 1941, pertaining to detergent type I. The industry is urged to forward its comments to the committee at an early date so that the best possible specification can be drawn up prior to circulation to Federal Departments for approval.

The following excerpts are offered as being characteristic of the new specification and as being of general interest to the industry:

Under "material and workmanship" are the following requirements:

C-1. *Material.* The material shall include any free flowing form, such as powder, granular crystalline, and flake, and shall be suitable for use in spray-type mechanical dishwashing machines.

C-2. *Workmanship.* The material shall be thoroughly mixed and present no evidence of segregation of individual constituents, or of lumping or caking.

Under *general* requirements are:

D-2. *Stability.* Dishwashing compound shall remain stable, free-flowing and usable under conditions varying between −15°C. (5°F.) and 60°C. (140°F.) of storage and shipment in original containers for a minimum of six months after delivery.

D-3. *Odor.* The dishwashing compound shall be free from objectionable odor in either dry form, or in solution.

D-4. *Abrasion.* Use of the product shall produce no abrasion or undue wear on the surfaces of utensils, dishes or dishwashing machines.

D-5. *Toxicity.* Shall be relatively non-toxic and shall not cause irritation of the skin. (On this point it should be noted that the compound is not intended for manual use.)

D-6. *Instructions.* Detailed instructions, including temperatures of sprays, are given for the use of dishwashing compound in a spray-type machine.

Under *detailed* requirements are:

E-1a. *Permissible constituents of composition.* Constituents permissible in dishwashing compound covered by this specification include sodium phosphates, sodium carbonates, sodium metasilicate, moisture, and small proportions of sodium hydroxide. The composition of the material shall be as shown in the accompanying table:

Constituents	*Percent by Weight* Minimum	Maximum
Moisture	—	25
Alkali	30	45
Phosphates	20	—
Silicates	8	—
Carbonates	—	20
Insoluble matter	—	1
Total of P_2O_5, SiO_2, and CO_2	35	—
Total of Na_2O, P_2O_5, SiO_2 and CO_2	70	—

E-1b. *Inert constituents.* Total inert constituents (other than moisture and insoluble matter), including chlorides (as NaCl), sulphates (as Na_2SO_4) and other constituents not listed in paragraph E-1a, shall not exceed 3 per cent.

E-2. *pH and buffer capacity.* When tested as described in paragraph F-2e, the compound solution shall have an initial pH of not less than 10.5 and not higher than 12.0. The addition of 2 ml of O.1 N hydrochloric acid shall not reduce the pH of the solution by more than one unit. (Method F-2e employs the pH meter with glass electrode. no correction for sodium ion concentration being made.)

E-3 *Water-softening capacity.* This is defined as the ability to prevent precipitation of calcium and magnesi-

A new Federal specification for a dishwashing compound particularly suited to dishwashing machines of the spray type has been proposed and is being circulated among manufacturers for comment prior to approval

um compounds. When tested as described in paragraph F-2f, the weight of precipitate obtained shall not exceed 11 mg. (Method F-2f is a gravimetric method of determining the amount of calcium and magnesium soap precipitated when a standard solution of calcium and magnesium chlorides is added to a standard soap solution in the presence of dishwashing compound.)

E-4. *Corrosion.* When tested as described in paragraph F-2g, aluminum test specimens shall not be discolored or etched, nor shall a dense white film be formed on the surfaces. Slight dulling of the surfaces, or formation of a faint white film on the test specimens, shall not be interpreted as evidence of nonconformity with this requirement. (Test F-2g exposes duplicate specimens of bright-finished, uncoated, aluminum-alloy sheet, conforming to requirements for Type 1, condition ½-H of Federal Specification QQ-A-359, at 180°F. for 5 hours totally immersed in a 1:1 dilution of the stock solution in distilled water, maintaining the original level of the solution by addition of distilled water as may be required. After 5 hours, the specimen is removed, rinsed, and examined.)

E-5. *Foaming.* An 0.5 per cent solution of the dishwashing compound shall produce not more than 10 ml of foam when tested as described in paragraph F-2h. (Test F-2h measures the amount of foam produced by shaking a 1:1 dilution of the stock solution, cooled to 20°-25°C. in a 250 ml. glass-stoppered, graduated cylinder at the rate of about 50 inversions in approximately 2 minutes. The volume of foam is read after a wait of 30 seconds.)

E-6. *Lack of lumping or caking and particle size.* At least 99 per cent of the material shall pass through a No. 4 standard sieve conforming to the requirements of Federal Specification RR-S-366, when tested by method 210.1 of Federal Specification P-S-536. The particle size of mechanical mixtures of powdered ingredients shall be uniform, to minimize segregation of ingredients.

Comments from the industry regarding the requirements of the new specification should be sent to the Technical Committee, Bureau Federal Supply, Federal Specifications Board, Washington.

TGA Meets May 14-16

PAUL H. DOUGLAS
T.G.A. President

S. L. MAYHAM
T.G.A. Secretary

THE annual convention of the Toilet Goods Association, New York, will be held May 14, 15, and 16, 1947, at the Waldorf-Astoria Hotel, New York. The meeting will open Wednesday morning, May 14th, with a discussion on "Proceedings of Trade Practice Conference," with S. L. Mayham, executive vice-president of the Association, and Hugo Mock, counsel, and Gail B. Selig, associate counsel, presiding. The afternoon's program will feature addresses by Paul H. Douglas, president of the Association, S. L. Mayham, and a presentation on "Proposed Public Relations Program" by Miss Sally Dixon. Thursday will feature a report of the counsel, Hugo Mock, a report of the director of scientific research and standards, H. D. Goulden, and a discussion of the Lanham Trade Mark Act by Walter J. Derenberg and Miss Daphne Robert. The program for Thursday, May 16th, will include an address on "Foreign Trade in Cosmetics," by T. W. Delehanty, U. S. Department of Commerce, the election of officers and directors, and a closed meeting for manufacturers only.

The scientific section will feature a number of technical papers of interest to the industry: "Technical Phases of Cosmetic Management," by Everett G. McDonough, vice-president, Evans Chemetics, Inc., New York; "Some Studies of the Corrosion of Collapsible Tubes," by M. Schor and W. W. Sweet, Colgate-Palmolive-Peet Co., Jersey City, N. J.; "Determination of Freezing Expansions of Cosmetic and Pharmaceutical Preparations," by Albert F. Guiteras and Irving Reich, Foster D. Snell, Inc., New York; "Factors Affecting the Zone of Inhibition Antiseptic Test as it Applies to Toilet Goods Preparations," by Arthur R. Cade, Givaudan-Delawanna, Inc., New York; and "The Development of Organic Chemicals for the Cosmetic Industry," by H. E. Wassell and C. P. McClelland, Carbide and Carbon Chemicals Corp., New York.

P&G Appoints Staff

H. H. Staff, vice-president and general manager of Procter & Gamble, Ltd., Canada, has been appointed to an executive position in the foreign department and will be located at Cincinnati. W. E. Williams, formerly district manager of Procter & Gamble, Detroit will replace Mr. Staff in Canada.

The Mazzoni Soap Drying

A new Italian process dries soap continuously in a vacuum, deodorizes it, and feeds it to the plodder or as a flake to a collecting drum

By Casimiro Berti
Consulting Engineer, Genoa, Italy

DURING the war, a new process for the instantaneous cooling and drying of full-boiled soap was developed in Italy.

The process brings about a flash-drying of soap by first spraying it into a vacuum chamber and then causing it to adhere as a thin film to a metal surface where a high degree of heat transfer can be effected. The process does away with conventional frames, chilling rolls, dryers etc., and, starting with neat soap from the kettle, produces a continuously extruded bar or a flake as a finished product.

Due to the conditions of the times, however, it was not possible to carry the development beyond the semi-plant scale stage of development.

Since the end of the war, the process, patented by G. Mazzoni, has been put into practice at a number of soap plants in Italy and is being used on a commercial basis. A number of other factories are now installing such equipment. To the best of our knowledge, no other like process has ever been employed. The general features of the process may well be of interest to American soap makers.

The process cannot be compared technically with some of the newer American continuous methods in which the starting materials are oils and alkali and the end products are finished soaps. These processes, which present, per se, evident advantages and also a number of evident operational difficulties, and involve high capital outlay, are better adapted to large scale production, and therefore their application is limted to large plants. However, there are many large soap companies that prefer to boil their soap in kettles, following the traditional practice of the industry, and who would find the new Mazzoni process of considerable interest. The process can be adopted by any manufacturer of full-boiled soaps who is interested in modernizing the processing of his plant, large or small.

Neat soap, from the kettle, is pumped into a feed tank or crutcher. From this tank the soap is pumped through a filtering screen in a box provided with thermostatic devices for maintaining a constant temperature. The fluid soap from the tempering box is then pumped into an atomizer located in the upper zone of a cylindrical vessel maintained under vacuum. The soap is pumped to the atomizer through a revolving hollow shaft from which it comes out in the form of a fine mist through specially constructed gauged nozzles. The soap issuing from the nozzle is maintained at sufficient pressure to cause it to form a thin film adhering to the walls of the vessel, the temperature of which is regulated to cause variations as desired in the moisture content of the finished product. To the revolving nozzle shaft are attached a number of scrapers which, at each revolution, scrape the soap film from the walls of the vessel. By constantly removing the soap film and preventing it from building up beyond a certain maximum thickness, the efficiency of heat transfer between the soap and the metal walls of the vessel is kept high. A high vacuum is maintained on the system by means of a dry air pump working through a condenser.

The drying takes place in two steps: (1) The sensible heat of the soap is utilized during the time the soap, in mist form, passes from the nozzle to the walls of the vessel. The instantaneous evaporation that takes place with such a mist in a high vacuum converts the soap into extremely small pellets, and when the soap reaches the chamber walls, its temperature is approximately equal to the temperature of the system. (2) The drying takes place by the action of the heat transmitted through the walls. In cases where a small reduction in moisture is desirable, such as in the production of ordinary household soaps, heat may be drawn off through the walls by cooling, in order to promote a sufficient hardening of the soap to condition it for further processing.

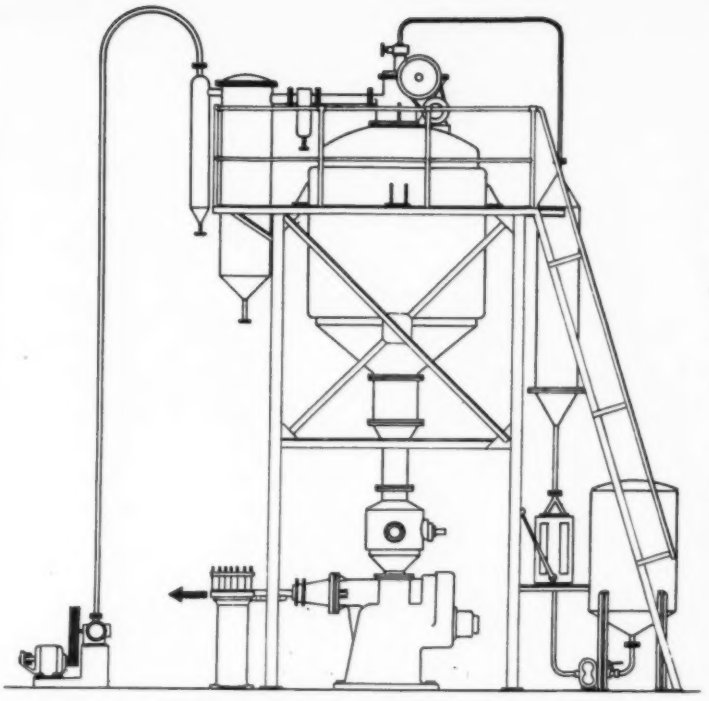
The soap scraped from the walls drops into the conical bottom of the apparatus, where a conveyor screw pushes it downward toward the

g Process

outlet. A vacuum-tight closure at the lower or outlet part of the apparatus can be arranged in two different ways. If the soap is to be finished off in bar form, either with high or low moisture content, a vacuum-tight closure is obtained by a plug of soap formed as the end of the screw conveyor pushes the soap flakes scraped from the walls against a perforated disk (like that employed at the head of a common plodder) through which the soap is extruded. When soap powder is being manufactured, the soap flakes coming out of the apparatus cannot be compressed, and in this case the discharge is effected into a closed drum, or preferably into one of a pair of drums adapted so as to be put into and out of service alternately so that interruption of operation can be avoided. In this case, a product can be obtained with a moisture content of 3 to 4%, and perfectly adapted for milling and pulverizing.

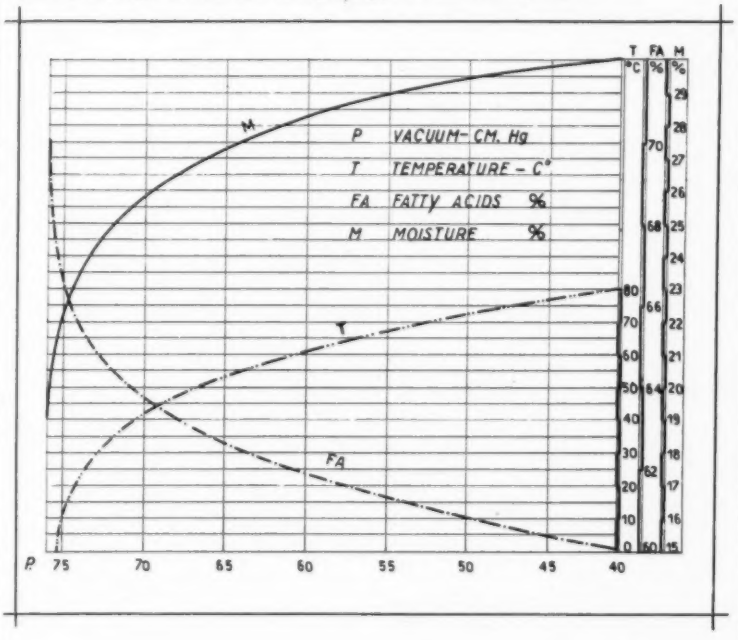
For the manufacture of perfumed soap, a special perfuming chamber is inserted at the outlet end of the perforated disk at the screw conveyor end. In this way, the soap is extruded in the form of small discs. The perfume is added in the form of a fine spray or mist and thus becomes intimately mixed with the soap. At the outlet of the apparatus, the perfumed soap in the form of thin discs is led to a special plodder provided with two screws rotating in opposite directions. Here the soap is highly compressed into continuous bars which are cut at the outlet end by an automatic cutting machine.

If household soap is to be produced to which builders such as sodium silicate, phosphates, etc. are added, the processing takes place in



Above: The installation diagram for the Mazzoni process shows that the set-up takes little floor space but quite a considerable amount of headroom. For careful control on a two-floor lay-out, control instruments could be panelized on the first floor near the finished soap outlet.

Below: The moisture curve represents that remaining in the soap after treatment under the various degrees of vacua and temperature. The figure 40 at the bottom right of the chart represents a relatively low vacuum or high absolute pressure; the figure 75 represents a very high vacuum and correspondingly a low absolute pressure.



a like manner with a mixer inserted between the feed tank and the pump.

FROM the foregoing it is apparent that instead of the usual soap-cooling set of devices, a single apparatus is used by which the conversion of neat soap into a solid homogeneous product ready for finishing takes place in but a few seconds. The advantages of the Italian process are:

(1) Reduction of manufacturing costs due to economy of labor and power.
(2) Lower initial capital outlay.
(3) Lower inventory investment as a result of elimination of stocks of partially processed materials.
(4) Smoothness of operation.

The output of installations now in operation is limited at present to between 800 pounds and two tons of soap per hour. For larger production, a number of such units could be set up in parallel. It is possible, however, that in the near future, equipment for larger unit production will be built.

The process permits the widest possibilities of application, as there are three variables in the system: (1) output of the spray nozzle, (2) speed of the nozzle-carrying shaft, and (3) temperature of the walls of the drying chamber. It is obvious that by suitably varying one of these factors, soaps may be obtained having a wide variety of moisture contents. The accompanying chart shows conditions existing while processing, on a semi-plant scale, a soap of 30% moisture content introduced into the chamber at 81° C. In this study, no heat exchange took place through the walls of the vessel. The curves show the variation of moisture and consequently of the fatty acid content and of the temperature of the soap at the outlet of the apparatus, as a function of the absolute pressure existing within the system.

THE cost of this single apparatus is lower than the cost of the various items of equipment usually employed in American cooling systems of frames and cutters, or of chilling rolls and dryers, and in European refrigerating presses and the like. The economy of labor is also apparent. A single worker, or at a maximum, two workers are sufficient to operate the process and supervision is not difficult. The power consumption for heating is low, particularly for producing soaps of low moisture content, not only because the heat content of the fluid soap is utilized for obtaining a partial evaporation of the moisture, but also and mainly because the required heat is transmitted under conditions of highly efficient heat transfer through the wall of the vessel. In the conventional installations, the drying is effected by means of warm air which, even by the most efficient equipment, is not more than 60% efficient.

Furthermore, the stocks of partially finished products, such as framed and slabbed soap, inherent to American processing, and requiring space and money to handle, are eliminated. Also, the losses of finished product during processing are practically avoided. Of course, said losses include not only the actual material losses, but also the amount of waste material that needs to be reprocessed. Another advantage to drying under vacuum in a closed system is that in processing soaps to be highly dried in a subdivided form, such as milled soaps, the possibility of oxidizing the surface layers is avoided. Moreover, the soap is almost completely protected in its contact with metal by the thin film of vapor formed at the soap-metal interface by the evaporation of moisture.

When soaps of certain fatty components are processed in this manner, a remarkable deodorizing effect has been noted. This is probably due to the fact that the entrainment of odors by the water vapor is much greater during atomizing under vacuum, and because of the much greater surface area exposed by the finely comminuted soap under the existing conditions of temperature and pressure. Such a fact will not be overlooked by the perfumer as he knows how much more perfume is necessary for covering the natural odor of the soap to be perfumed.

In countries using dried household soap, (viz: soaps the moisture content of which is less than normal) it is customary to dry the bars in warm air cells, where a progressively decreasing reduction of moisture content from the exterior to the interior of the bar is achieved. It is more difficult in this process to attain the desired uniform drying. By the Mazzoni process this problem has been solved as the soap coming out of the final plodder possesses a thoroughly uniform degree of humidity. Of course, in the production of soaps which run higher in moisture, it is necessary to reduce the evaporating effect of the atomizing apparatus. This is done by causing a coolant to circulate through a jacket fitted around the atomizing equipment. The loss of moisture is reduced to a few per cent and is exactly equal to the sensible heat loss of the soap, i.e. the difference between the temperature of the soap at the inlet and at the wall of the vessel. Soap obtained by cooling with the refrigerating solution is lower in temperature and is of sufficient plasticity to permit easy plodding. The "supercooled" soap thus produced possesses all the characteristics of comon household soap obtained by the usual processes.

From the foregoing description, it would appear that the Mazzoni process presents a number of advantages over known drying processes.

EDITOR'S NOTE:—This process is not entirely new to the American soap-making industry, points out Alan Porter Lee, New York consulting engineer. The process or one quite similar to it was patented by M. Ittner, Colgate-Palmolive-Peet Co., Jersey City, and also by Lorenz. The dates of these patents are not recalled nor is it known that the Americans had a scraper of the type mentioned in this paper for removing the soap from the walls of the vessel.

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On the basis of x-ray, vapor-pressure, and microscopic evidence, certain minor variations previously encountered among x-ray patterns of beta sodium palmitate are accounted for by the existence of a beta solid solution phase extending at room temperature from 0.2 to 2.5 per cent of water. R. H. Ferguson, F. B. Rosevear, and H. Nordsieck, *J. Am. Chem. Soc. 69*, 141-6 (1947).

FATTY ACID TRENDS...

New processes being developed, produce "tailored" fatty acids to meet specialized requirements

NEW specialized uses for fatty acids have brought an expansion in the development of processes to produce fatty acids "tailored" to meet these newer requirements. Until about ten years ago, the supply of certain special types of soaps, other than regular potash and soda soaps, was confined chiefly to the so-called metallic soaps such as magnesium, calcium, zinc, aluminum, cobalt, lead, manganese soaps for use in lubricating greases, paints, inks, cosmetics, waterproofing, fungicides, and the like. Although many of these continue in importance industrially, the recent development trend has been to focus chief attention on the other end of the soap molecule, the fatty acid end.

Fatty acids, "tailored" to fit special needs, have rapidly been winning places in the list of chemical staples during the past several years. During the war, the use of fatty acids expanded to some 500 million pounds per year and production has continued to grow under the stimulus of new developments.

Nature has not been considerate of the fatty acid user in her synthesis of fats. She has tied up in each of the fatty oils a number of fatty acids with different properties, and it has remained for science to segregate and classify them, and offer each of them as a separate entity "tailored" to fill a particular need. In an article on "Fatty Acids" in *Progress thru Research*, published quarterly by General Mills, Inc., Dr. Ralph H. Manley, director of research for the company offers information about the nature, production and uses of fatty acids that is of considerable interest to those in the industry concerned with their supply or use.

"Fatty acids are considered essential as starting materials for most non-soap detergents and emulsifying agents. In addition, glycerine, which is a basic material of industry, is a by-product of fatty acid manufacture. Today's fatty acids and their derivatives are extremely diversified. In addition to the applications already mentioned, they are used as dispersing agents in self-polishing waxes, lubricating greases, food shortenings, face creams, brushless shaving creams, leather finishes and printing inks. They are also an important raw material for several types of nylon, rich lathering soaps for use in hard water areas, white enamels, as well as for a long list of other products ranging from textile treating compounds to synthetic perfumes.

"Fatty acids themselves are compounds of carbon, hydrogen, and oxygen, and are found in all animal, vegetable and marine fats and oils. They occur as tri-glycerides—that is, fatty acids chemically combined with glycerine in such a manner that three molecules of fatty acids are linked to one molecule of glycerine. There are many different types, varying from a hard, waxy, crystalline material to a thin fluid with approximately the consistency of fuel oil. Practically, fatty acids may be divided into three general groups:

(1) saturated acids
(2) oleic acid
(3) drying or oxygen-sensitive polyunsaturated acids

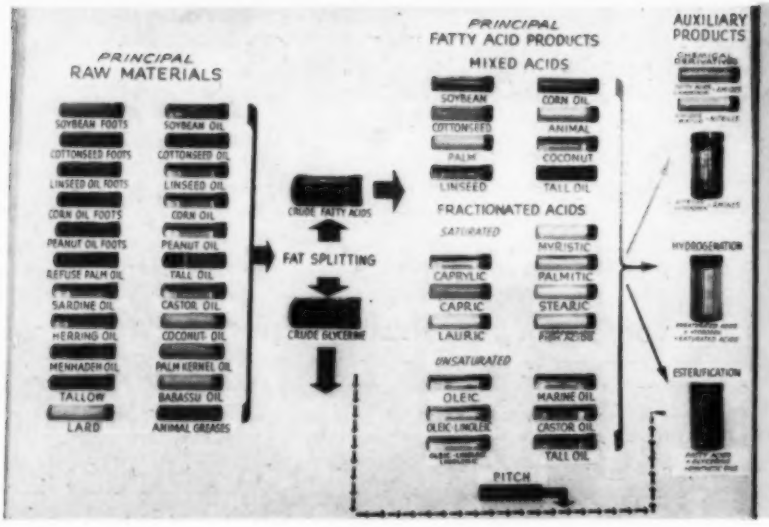
"The saturated acids differ from each other only in size of the molecules—that is, one may have 10 carbon atoms in its molecular chain, another 12, still others 14, 16, and 18."

These molecular chains of carbon atoms contain as many hydrogen atoms attached to the carbons as it is possible for them to hold, hence the acids are known as "saturated acids." The fatty acids so saturated with hydrogen atoms are much harder and more solid in character and more stable and more inert chemically. They are more resistant to oxidation and resist the tendency to combine with one another. "They are solid materials in most cases and useful in cosmetics, soap, non-soap detergents, candles and waxes, Dr. Manley states.

"Oleic acid, like some of the saturated acid series, has 18 carbon atoms in its chain, but it is a liquid." Its molecule, having but one point of unsaturation, has some of the properties of the saturated acids and also some of the properties of the unsaturated ones. "Although it possesses no drying power in paints and varnishes, it is useful in shortenings, soft soaps, textile processing materials, cosmetics, and similar products.

"Drying acids on the other hand, are all liquid, oxygen-sensitive materials which serve as quick-drying components in paints and varnishes. Since they are highly susceptible to reaction with oxygen, they will combine with one another when exposed to the air—and it is this action which causes paint containing them to dry rapidly.

"These three types of fatty acids are found indiscriminately mixed in the naturally synthesized fats and



The principal raw materials for fat-splitting are crude vegetable, nut, marine and animal oils, garbage greases and foots. The products of the splitting reaction are crude glycerine and crude fatty acids. The fatty acids are sold as mixed acids, or are distilled and fractionated to refine them and separate them into saturated and unsaturated components and pitch. The fatty acid products may be modified in three ways. They may be treated with ammonium derivatives to form amines, amides and nitriles; or treated with hydrogen to form saturated acids; or esterified with alcohols to form synthetic oils.

oils. Soybean oil, for example is composed chiefly of palmitic acid which is saturated; oleic acid which is unsaturated but has no drying properties; and linoleic and linolenic acids, both of which have strong drying oil characteristics. Furthermore, cottonseed, corn, linseed, peanut, perilla and sesame oils all contain essentially the same fatty acids as soybean oil, differing chiefly in the proportions in which those acids occur.

"The same general situation exists in the case of the so-called lauric acid oils, palm, palm kernel and coconut oils; and in the marine oils, sardine, menhaden and whale. The lauric acid group, as in the case of soybean and cottonseed oils, is composed of heterogeneous mixtures of desired and undesired components, but contains sufficiently high percentages of lauric, myristic and palmitic acids to be useful in soaps, synthetic detergents and cosmetics. The marine oil group combines non-drying oleic acid with the C_{20} and C_{22}, highly unsaturated acids, both of which have unusually powerful drying properties. Animal fats such as beef tallow and lard contain saturated palmitic and stearic acids as well as oleic acid. Since pork fat, for example, contains too much of the liquid oleic acid to be entirely satisfactory as a shortening, it must be treated with hydrogen. By adding hydrogen to the unsaturated part of the chain of the molecule it is changed to stearic acid. In the case of beef tallow the situation is reversed. It contains too much of the hard stearic acid to have desirable shortening qualities, hence it cannot be used in the manufacture of edible products unless it is blended. On the other hand, beef tallow must be completely hydrogenated to stearic and palmitic acids before it can be used in making candles, rubber tires and cosmetics.

"UNTIL 25 years ago fatty acids were considered undesirable contaminants in vegetable oils. Crude cottonseed, corn and linseed oils, intended for use in food or in paint oils, contain from 1% to 3% free fatty acids, and sometimes more, mixed with their triglycerides, and refiners found it necessary to wash their oils with dilute caustic to remove these 'contaminants.' The resulting neutralized acids, known as 'soapstock,' 'refinery foots' or 'refinery residues' were then sold to soap makers for little more than shipping costs and frequently were a 'drug on the market.' By 1911, a few American processors were converting soapstocks into their mixed fatty acids by heating them in the presence of a strong caustic and acidifying them with sulfuric acid. They then distilled the liberated fatty acids in crude vat stills. Although the resulting distilled acids were much improved in color by this treatment, they still were composed of random mixtures of the same fatty acids that were present in the neutral oils. The old conflict of good and bad properties for any one particular use still remained, and the product was used only for making soap, lubricating greases and similar substances. We had to accept these indiscriminate offerings of nature and make the best of an unsatisfactory situation.

"About this time, petroleum refiners made a discovery which gave the fatty acid industry a much needed stimulus. They found that through the use of large scale continuous distillation columns they could separate crude petroleum into sharply controlled cuts of gasolines, hydrocarbon solvents, fuel and lubricating oils."

By 1934, these techniques were adopted from the petroleum industry by workers at the Armour Institute as well as at other industrial laboratories and were applied to the fractional distillation of fatty acids. The process developed at Armour & Company consisted of "splitting crude vegetable oil refinery soapstocks, palm and coconut oils or fish oils into glycerine and fatty acids and then vacuum distilling the resulting acids in continuous column stills. By this method, they effectively separated palm and coconut oils into portions consisting of lauric acid, palmitic acid and stearic, oleic and linoleic acids. In addition, they separated soybean, coconut and corn oil acids into palmitic acid and a stearic-oleic-linoleic-rich fraction; and coconut fatty acids into relatively pure cuts of caproic, caprylic, capric, lauric,

By converting vegetable oils into their free fatty acids and reacting them with a synthetic alcohol, four or more acid groups can be tied together in one molecule rather than three as in the natural triglyceride. Two molecules of the resulting ester can then be further linked with phthalic anhydride to form drying oils far superior to the natural product. Modified esters and other fatty acid derivatives are basic and intermediate chemicals for a number of finished products in the chemical specialties field. Wesley A. Jordon, General Mills Research Laboratory is shown preparing such an ester in the laboratory.

myristic, palmitic and stearic acids. In other words, it had at last become commercially practical to separate naturally occurring mixtures of fatty acids into groups based on the chain length of their respective molecules; and equipment capable of processing millions of pounds of fatty acids per year had become available.

"In releasing fatty acids from the glycerine with which they are combined in nature, one of three splitting methods commonly used at first and still in wide popularity was the Twitchell process. In the Twitchell process, developed by Ernst Twitchell in 1898, the triglyceride oils and fats are boiled with steam in open tubs, (in the presence of an acid catalyst) for from 24 to 48 hours. This causes the water to react with the fats, liberating fatty acids and glycerine. Since the latter dissolves in the water to form a 'sweet water' layer which separates to the bottom of the Twitchell tub, the fatty acids are effectually isolated and may easily be recovered."

DURING the early part of this century, the batch autoclave and the alkali saponification process were used in addition to the Twitchell method for splitting fats. According to the discussion by Dr. Manley, "the hydrolysis of fats in aqueous caustic or in water alone was believed at that time to be a heterogeneous two-phased process wherein the hydrolysis reaction took place only at the interface between the oil and water layers. It therefore followed that the more minute the droplets of oil in an oil-in-water emulsion, the greater would be the area of contact between the oil and the water at the interface and the faster the rate of hydrolysis. Now it is generally accepted theory that the hydrolysis of fats takes place chiefly between water and the fat *which is dissolved* in it and not at the interface between the oil and water layers.

"Since most natural triglycerides fats and oils are only about 0.1% soluble in water at room temperatures but increase in water solubility to as much as 23% at 470° F., it is clear that the quickest way to carry out the splitting reaction is to dissolve partially the fat in water in a pressure reactor, designed to keep the water in a liquid state at very high temperatures. In 1938, Martin H. Ittner of Colgate-Palmolive-Peet Co., Jersey City, was granted patent U. S. 2,139,589 covering a fat splitting device based upon this principle. In 1939, U. S. patent 2,156,863 was granted to Victor Mills of Procter & Gamble Co., Cincinnati, covering a process involving somewhat the same basic principles, (*Soap & Sani. Chems.* XVI, 5, P25). In Ittner's process a finely divided stream of oil is allowed to rise through a tall column against a downward flowing current of water at relatively high temperatures and pressures. As the droplets of oil trickle upward through the hot water, they partially dissolve and then react with the water to form glycerine and fatty acids. Since the glycerine is soluble in water at all temperatures, it is carried away by the downward moving column of water as fast as it is formed. By the time the oil droplets reach the top of the tower, the fat has become nearly 100% fatty acid.

"Although these modern improved continuous distillation and fat splitting methods have kept the fatty acid industry abreast of other technological fields, one obstacle still separates the fatty acid producer from his ultimate goal—the complete separation of fatty acid mixtures. Continuous column distillation techniques will effectively separate fatty acids of different chain lengths but not those containing the same number of carbons. Since vegetable oils contain varying mixtures of C_{18} acids, the industry would welcome a practical system for isolating these components individually.

"TWO general methods for separating C_{18} fatty acids from each other are now in the course of pilot plant development. The oldest of these, known as fractional solvent crystallization, has been studied by D. H. Wheeler, Research Laboratories, General Mills, Inc., by J. B. Brown, Ohio State University, and by others, and is being adapted to commercial operation by several com-

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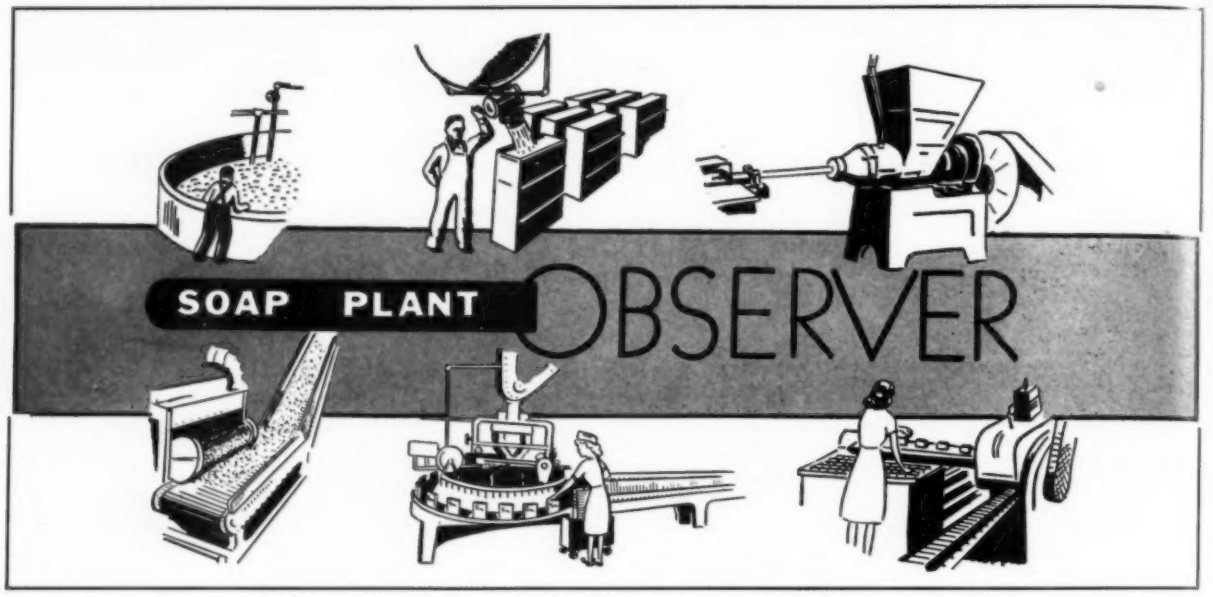


OVER the past few months we have received a number of inquiries regarding the cracking of milled soap and the subject of soap milling in general. Smaller organizations, particularly those making soap by the semi-boil process, often express a desire to cash in on the higher priced toilet soap trade by offering a milled soap. There still appears to be a belief in the industry that it is a mistake to apply milling to any soap other than that from a full-boil base. Some soap makers apparently believe that you just *can't* mill a cold process or semi-boil process soap, while others merely say that it is impossible by these processes to make a soap that will compete in quality with a full-boiled settled soap, and therefore it is unwise to add to the cost of the bar by milling it. However, it would seem plausible that if the texture, homogeneity and appearance of a semi-boiled soap can be markedly improved by milling, and it can compete in all other respects with the better quality milled toilet soaps, then there is sufficient justification for milling the semi-boiled product.

This opinion was given by your observer some years ago to confirm the conclusion reached by a chemist who found himself faced with this very problem. This chemist, whose training had not been in the field of fats, oils and soap, was given the assignment of revamping the soap-making division of his company. He had made the decision of milling his semi-boiled soap after considerable thought, readings and personal inquiries into this new field. Yet he found considerable opposition to this so-called "unorthodox and risky venture." One of the cogent reasons for the opposition was that this particular firm was using a special oil blend which was not generally used in the trade, and there was no evidence anywhere in the industry that such a product would mill. Moreover it was their belief that milling should be confined to full-boiled soaps. However, the chemist progressed along sure technical ground. First, he got together all the information he could and then made his decision. He arranged to have a quantity of the product milled with the help of one of his raw materials suppliers who had a small laboratory-scale milling, plodding and stamping set-up.

After thoroughly testing and observing the milled cakes, he was convinced. He bought milling equipment and with the help of a service engineer from the equipment supplier he installed the machinery, put it into operation, and trained himself and his help from day to day in good milling practice. By using the experience of the trade plus a few modifications to suit his particular product, and by training his operators in good milling practice, he soon was able to offer the trade an excellently milled, high quality toilet soap from a semi-boil base. If a soaper wishes to make his soap by other than full boil process, there seems to be no sound technical reason to prevent him from milling it successfully if he so desires.

IN A recent letter, a soaper milling a semi-boil soap complained that his soap cake was subject to cracking when in use on the washstand. He uses a 70/30 blend of edible beef tallow and coconut oil fatty acids and cuts back a little on both to allow for about 3 or 4 per cent of castor oil-AA cold pressed. He uses soda and potash lyes at 36° Baume, the potash lye being about 17 per cent of his total lye requirement. His soap in the crutcher is finished with a free alkalinity of 0.04 per cent NaOH and is then run through steel rolls. He states that the flakes from the rolls contain about 10 per cent to 12 per cent moisture, and that he tries to keep the moisture of the finished bar around 14 per cent. How he does this is not mentioned and somewhat puzzling. He processes the flakes in 200 pound batches mixed with small quantities of titanium dioxide, perfume and a stabilizer. The batches are sent through the granite rolls four times, then through a preliminary plodder, and finally to the finishing plodder and cutting table. The bar is not pressed. The titer of the fatty acid mix of his soap cake is 41°C.

It would appear to us that in the last fact mentioned by this soaper lies

the answer to his cracking problem. Some soap makers manage to mill a product of 38 or 39°C. titer, but it is not considered good practice to try to mill a soap with a higher titer. Many soapers who have experienced cracking trouble with their milled soap have traced it back to purchases of unusually high titer tallows particularly from western sources. A reduction in titer was suggested as the *most likely* answer to this cracking problem. The addition of castor oil was probably undertaken to reduce the titer of the fatty acid mix. Castor oil has a varying titer but often it is as low as 3°C. The substitution of a good grade of 10°C. titer red oil for the castor oil and for part of the tallow was suggested for the soaper's consideration.

It is the opinion of your observer that most milled soap cracking is the result of malpractice before the soap ever gets to the milling room. On this point, one of our leading producers of private brand and specialty toilet soaps has this to say: "The chances are that a good case of persistent cracking of milled soap from a full boil base, when it reaches the washstand, is more often the result of incorrect kettle house practice than it is of incorrect adjustments and mistakes in the milling room." The mistakes in formulation and in kettle house procedure that cause cracking have been discussed many times in this publication during the past years. They are more insidious and harder to detect than incorrect milling procedures. Such errors as too high a salt content and inclusion of nigre are among them. Improper use of additives belongs to this class of error. Incorrect moisture content and over- or under-drying of the flakes before they reach the milling room will also cause trouble.

In the milling room of above-quoted producer of private brand milled toilet soaps, as many as half a dozen different products of various colors, odors, sizes and shapes and with various superfatting agents and additives can be seen on the mills at the same time. He explains, however, that the same full-boiled, settled soap stock is used as a base for all of them. The only variable allowed is a moisture content distinctive to each product, depending upon the amount of perfume or other additive used, or upon some other quality or physical characteristic desired in the pressed bar.

SOMETIMES a change in the milling room practice is all that is needed to correct cracking of the milled toilet soap cake. It is most difficult to offer constructive advice on milling practice without on-the-spot observation. Here are a few points that should be taken into consideration, however, when dealing with cracks which result from mechanical mishandling of an otherwise suitable soap bar. This type of crack is the result of stresses and strains within the bar set up by incorrect machining or handling of the material in the milling room. In the first place, the milling room should be warm, not too humid or too dry, and should be free from drafts and areas of uneven temperature. The soap should be kept moving through the amalgamator, mills, plodders and on through the cutters and presses in an unbroken flow. Operation should not be interrupted so as to allow the soap to accumulate at any one point where drying or chilling could occur.

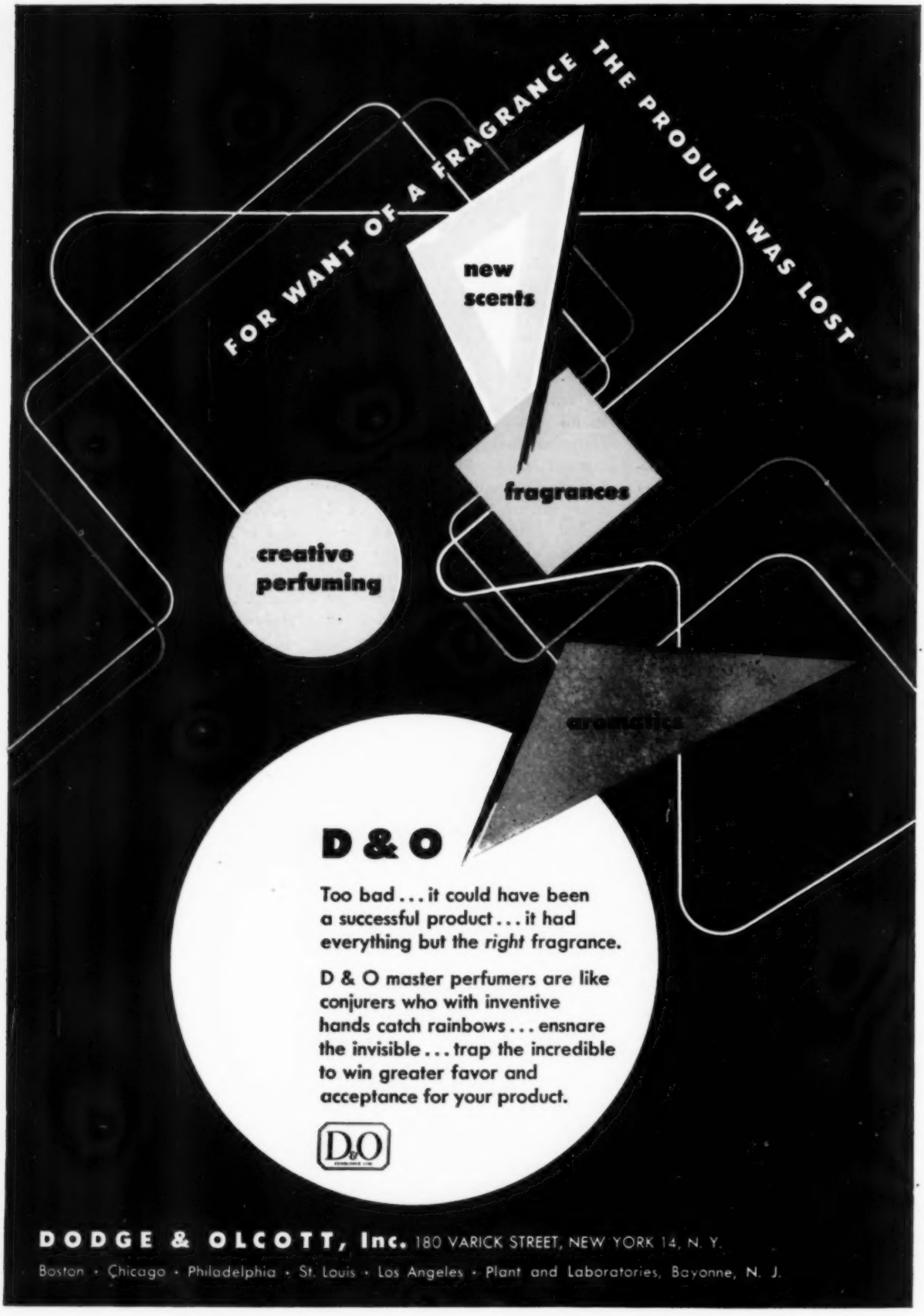
Let us pass through the milling production line concurrently with the soap, and check a few points as we go along. First the flakes coming to the milling room should be warm and a moisture content of about 13 to 15 per cent should be evenly distributed throughout the batch. Some soapers arrive at a homogeneous batch by storing the flakes after drying for about 36 hours or longer. Another soaper suggests that the dried flakes be plodded to a diameter of about ⅝ inch before storage. This allows time for a general even distribution of the moisture content. As the soap passes through the rolls, it is well to check the thickness of the flake from time to time. Dry spots are caused by unequal drying of flakes of varying thickness. Superdried particles do not readily re-absorb moisture from humid air or near-by moist soap. Avoid unnecessary heating or chilling when passing the flakes through the rolls. Heat will increase the loss of moisture. Each passage through the rolls will generally cause a reduction of about 0.5 per cent moisture. Avoid too rapid passage of cooling water through the rolls. The ribbons leaving the mills should be slightly warm, and should pass immediately to the plodders. No fixed temperature is recommended for these operations. It depends on the formulation, and local conditions of temperature and humidity. It is as necessary to avoid overheating the soap in the plodders as it is to avoid overcooling in the mills.

Cracking of the cake may result from faulty plodder pressure. The soap may need *more* or *less* than the normal specified pressure. A dry soap requires more than the normal amount of heat and compression, but it is best to avoid extreme adjustments and use of heat. A working temperature of the hot water jacket on the plodder nozzle has been recommended as 50-55° C. but this, of course, represents a specific case. Excessive cooling of the soap in the compression chamber is avoided if the soap is kept moving through the plodder.

The working pressure of the plodder may also be at fault. It can be controlled by increasing the size of the screw or decreasing the size of the holes in the baffle plate. Loss of compression can occur where soap is un-

(*Turn to Page* 85)

Most frequent cause of cracking of milled soap is faulty kettle house practice. Both cold and semi boil process soaps can be successfully milled.


FOR WANT OF A FRAGRANCE THE PRODUCT WAS LOST
new scents
fragrances
creative perfuming
aromatics
D & O
Too bad . . . it could have been a successful product . . . it had everything but the *right* fragrance.
D & O master perfumers are like conjurers who with inventive hands catch rainbows . . . ensnare the invisible . . . trap the incredible to win greater favor and acceptance for your product.
D&O
DODGE & OLCOTT, Inc. 180 VARICK STREET, NEW YORK 14, N. Y.
Boston • Chicago • Philadelphia • St. Louis • Los Angeles • Plant and Laboratories, Bayonne, N. J.

TRADE NEWS. . . .

Cook Werk Sales Head

A. Werk Cook was appointed vice-president in charge of sales for M. Werk Company, Cincinnati, April 10th.

A. W. COOK

He will be in charge of both package and bulk sales for the company. Mr. Cook is the fourth generation of one of America's pioneer soap-making families to become associated with the company, which was founded in 1832. He served four years in the Navy during the late war and is a Lieutenant Commander in the Naval Reserve. J. N. Seifert, who joined the company eighteen months ago is general sales and advertising manager for packaged goods, and C. C. Ritter heads bulk sales.

Oronite Detergent Plans

Oronite Chemical Co., San Francisco, recently announced more detailed plans for marketing their detergents. Plans include production of two dry detergents, namely, detergent D-40 and S-60. The former will be a drum-dried material composed of 40 per cent alcohol soluble and 60 per cent alcohol insoluble materials while the S-60 will be spray dried containing 60 per cent alcohol soluble and 40 per cent alcohol insoluble materials. Commercial production of D-40 is expected in the second quarter of this year, the S-60 will follow after that period. These materials will be marketed to soap manufacturers, compounders, packagers, and distributors who will market them under their own brands. A bulletin describing Oronite's chemical detergents will soon be released.

Kemso to Build

Kemso Chemical Co., Houston, Texas, announced in April plans for immediate construction of a new manufacturing plant in Orange, Texas. The first unit of the new plant, to occupy three ond one-half acres, will cost about $90,000. The new building of steel and concrete construction will have 10,000 square feet of floor space. A second unit to consist of a warehouse will be constructed at a later date at an estimated cost of $40,000. The plant will have its own railway spur serviced by the Missouri Pacific railway.

The new plant will manufacture various chemical specialty products and a complete line of industrial cleaning compounds and will employ about thirty-five people from the Orange district. James H. Seehy, plant superintendent, will be in charge. He has been connected for the past six years with the production department of Consolidated Steel Corp., Orange. Kemso Chemical Co. was founded in 1943 by its present president, George G. Hippard. The general offices of the company will remain in Houston for the present.

Colgate Elects Blakney

J. H. Blakney was elected vice-president in charge of purchases for Colgate-Palmolive-Peet Co., Jersey

J. H. BLAKNEY

City, at a meeting of the board of directors April 23rd. He has been director of purchases since March, 1934. Mr. Blakney, joined the B. J. Johnson Soap Co., Milwaukee, in 1914 and later was with the Palmolive-Peet Company before it was consolidated into the present Colgate-Palmolive-Peet organization. During the first world war, he served with the Army. Mr. Blakney is president of the Oil Trades Association.

Other officers and directors were re-elected including A. W. Peet, honorary chairman of the board; S. B. Colgate, chairman of the board; and E. H. Little, president.

Industry Reduces Soap Prices

In response to President Truman's appeal, several soap companies dropped their prices during the past month. A reduction of up to 10 per cent was announced by M. Werk Co., Cincinnati, on April 18th, as a result of lower raw materials costs. On April 23rd, two of the major soapers followed suit, Colgate-Palmolive-Peet Co., Jersey City, cutting the price of their bulk soap 10 per cent following the sharp drop in the price of tallow (from 27c to 18c per lb.); and Lever Brothers Co., Cambridge, Mass., lowering prices on all major soap items and glycerine 10 per cent in spite of recent wage increases granted by the company. Procter & Gamble and Swift & Co., among others, also announced price reductions. Following in the wake of these lower prices by soap makers, three major retail chains cut prices 10 per cent on soaps April 29th. The Atlantic and Pacific, Grand Union, and Safeway companies marked down all soap stocks an average of 10 per cent without waiting for new, lower cost soap supplies from the industry.

SYNTHETIC DETERGENTS

RN-600

PROPERTIES

Amber liquid, free flowing, non-objectionable odor, pH 1% solution 9.3.

COMPOSITION

Fatty amide type, active organic 87%.

USES

Manufacture of detergents of all types, including metal cleaners, acid dairy cleansers, rug cleaners and auto washing compounds. 10% of RN-600 mixed with anhydrous alkalis and phosphates makes very efficient, inexpensive powdered cleansers.

RN-31

PROPERTIES

Free flowing, off-white, granular and powder. pH 1% solution—neutral.

COMPOSITION

Modified alcohol sulfate, active organic 31%.

USES

Ideal for formulation of household and industrial cleaning compounds where a mild, neutral but powerful detergent is desired. Mild on the hands; compatible with soap; suitable for washing woolens, cottons, silks, rayons and acetates at safe temperatures.

RICHES-NELSON, INC.

Chemicals and Allied Products

342 MADISON AVENUE · NEW YORK 17, N.Y.

Offer "Sopec" Hand Soap

Speco, Inc., 3142 Superior Ave., Cleveland, O., is distributing through hardware stores and other outlets a new non-abrasive industrial powdered hand soap and grease remover called "Sopec," for washroom dispensers. The product is available in 6 oz. containers, 5 lb. fiber packages and 170 lb. fiber drums.

Pepsodent Names Gershon

Dr. S. D. Gershon was recently appointed director of new product development for the Pepsodent division of Lever Brothers Co., Cambridge. He joined the division in 1943 as a research chemist. He had formerly been a member of the faculty of the College of Pharmacy at the University of Illinois. He is president of the Chicago branch of the American Pharmaceutical Association.

Colgate Appoints Morais

Charles H. Morais was recently appointed divisional manager of the Province of Quebec for Colgate-Palmolive-Peet Co., Ltd. Mr. Morais was formerly manager of the Montreal district office and has been with the company since 1922. John Begin has been appointed to replace Mr. Morais as Montreal district manager. Manager of the newly created district, Quebec West, is Real Ethier. William E. Pilotte will continue as district manager of the Quebec city area.

Fire Sweeps Farrar Plant

The plant of the Farrar Industrial Products Co., manufacturers of soap, cleaners, and lubricants, Los Angeles, was swept by fire on April 2nd. Two of the four plant buildings were destroyed with a loss estimated to be $175,000. One warehouse stocked with oil and alcohol valued at $65,000 was saved, it was revealed by W. D. Bowers, a partner of the firm.

Chicago DCA Circus Party

The spring dinner dance and circus party of the Chicago Drug and Chemical Association, is being held May 17th at the Drake Hotel, Chicago. The party features a dinner and a floor show of radio, screen and stage stars. A cocktail party will be held before the dinner. Chairman for the party is Gerald Pauley, Monsanto Chemical Corp., and co-chairman is Ralph Olson, S. B. Penick & Co.

P&G Introduces Prell

Procter & Gamble Co., Cincinnati, recently introduced its new cream shampoo, "Prell" on a nationwide scale after a year of testing in the markets of Providence, Indianapolis, and Minneapolis-St. Paul. "Prell" is a clear, translucent concentrated product of the synthetic detergent type. The large size tube contains two and one-half ounces, the medium size, one and one-half ounces, and the smaller personal size, five-eighths ounce.

Peck Elects Officers

Peck Products Co., St. Louis, elected the following officers for the year 1947: G. B. Peck, chairman of the board; A. G. Peck, president; Leo G. Peck, vice-president and assistant treasurer; L. W. Peck, secretary and treasurer; M. M. Peck, assistant secretary.

Phila. Quartz Rep. Killed

Lloyd W. Wright, Chicago area representative of Philadelphia Quartz Co., Phila., was one of two persons killed last month in the wreck of a Burlington Railroad streamliner at Downers Grove, Ill.

CDCA Holds Luncheon

The Chicago Drug and Chemical Association held its April luncheon on Thursday, April 24th, in the Gold Coast Room of the Drake Hotel, Chicago. The speaker for the occasion was Dr. Luther Gable, a member of the Adventurers' Club, known for his dramatized experiences on the radio.

Detrex West Coast Plant

A new source of supply for its "Perm-a-clor" and "Triad" metal degreasing solvents was announced recently by Detrex Corp., Detroit. The output of degreasing solvent of a new west coast plant will be devoted to non-flammable stabilized chlorinated hydrocarbons for high-speed cleaning in both the metal and dry cleaning industries. Offices and warehouses distributing these solvents are located in various cities on the west coast under the management of S. B. Crooks.

Phipps Prods. "Purasuds"

Phipps Products Co., 30 Huntington Ave., Boston, Mass., has introduced "Purasuds," a new liquid soap lotion for individual soap dispensers. The product comes in either of two colors, rose or green, and is available in 5-gal. cans or large steel drums.

Canadian TGA to Meet

The annual convention of the Toilet Goods Manufacturers Association of Canada will be held June 19th to 24th, at Manoir Richelieu, Murray Bay, Quebec, according to a recent report from S. L. Mayham, executive vice-president of the TGA, New York.

Blakney Heads Oil Trades

J. H. Blakney, Colgate-Palmolive-Peet Co., Jersey City, was elected president of the Oil Trades Association of New York at the annual meeting held recently at the Waldorf-Astoria Hotel, New York.

Signs Kate Smith

Manhattan Soap Company, New York, will feature Kate Smith on a new Mutual Broadcasting System radio show, "Kate Smith Speaks," over WOR New York in June. The new radio program will advertise the company's "Sweetheart" soap.

Jergens Appoints Birch

Chester T. Birch was recently appointed vice-president in charge of advertising by Andrew Jergens Co., Cincinnati. Mr. Birch is also vice-president of Robert W. Orr & Associates.

MACKENZIE DETERGENTS

TRI-MET — Mild, general household cleaner for painted surfaces in one application. Needs no wiping or rinsing. Fine, white, free-flowing Tri-Met is an excellent substitute for Tri-Sodium Phosphate in household compounds.

METASIL — Sodium Metasilicate, penta hydrate. Regular grind.

HAND CLEANER — Powdered. In bulk.

DRIVEWAY CLEANER — For driveways, runways, garage and factory floors, grease pits, etc.

DISHWASHING COMPOUND — *(Pink or White)* Built to Government specifications for machine dishwashing.

SYNTHETIC SOAP POWDER — For Jobbers, Packagers and Industrial Users. Currently available in carlots.

CONCENTRATED SOAP POWDER — Type 1—For laundry. Type 2—For hand dishwashing.

As basic manufacturers of cleaning chemicals, we have the facilities for making complete synthetic organic detergents to your specifications.

MACKENZIE LABORATORIES, Inc.

Front and Yarnall Streets, Chester, Pa.

Lever Markets Breeze

Breeze, the new Lever soapless detergent starts to roll off the production line of the Lever Brothers Co. at their Cambridge, Mass. plant. The first cases of "Breeze" travel the conveyor to the shipping department. The new product, derived from a vegetable oil base, is being distributed first in the mid-west as the beginning of a nation-wide sales program. Two million dollars have been spent by Lever in the development of the new product which the company is aiming principally at the markets of the hard-water areas. The company believes that the new product can be marketed without in any way detracting from the over-all consumption of soap. "Breeze" will retail at prices varying up to 35 cents per package for an approximately nine-ounce carton.

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Bryan Joins Firmenich

Charles B. Bryan has joined Firmenich & Co., New York, to take charge of its newly established flavoring materials department. Mr. Bryan served three years in the AAF in China. Following his return he resumed his former connection with Fritzsche Bros. Co., leaving that organization to join Firmenich.

Revamp Federal Spec Committee

THE technical committee on detergents of the Bureau of Federal Supply, Federal Specifications Board, Washington, D. C., has been reorganized in order to provide for more efficient functional activity and closer cooperation with industry. The creation of a number of new sub-committees, headed by the below-indicated members of the main committee was announced last month by Harry Fleisher, Bureau of Ships (336), Navy Dept. Washington, who is now chairman of the technical committee on detergents succeeding F. W. Smithers, National Bureau Standards, who retired in August 1946. The creation of the sub-committees is expected to provide for a permanent working organization capable of handling efficiently the broad scope of materials governed by the committee. The new set-up is as below:

Under the new sub-committee organization, a means is provided for cooperation with industry, since it permits of attendance at subcommittee meetings by representatives of interested industrial firms. It would be helpful, therefore, if members of the soap and sanitary chemicals industry would write the subcommittee chairmen informing them of the respective consultants who would be authorized to cooperate with the various groups listed below in drafting completely acceptable Federal specifications. The addresses of the chairmen are as follows: J. H. Bower, (vice-chairman) National Bu-

Subcommittee	*Function*	*Chairman*
1.	Membership and consultants	Harry Fleisher
2.	Methods of analysis	J. H. Bower
3.	Physical tests	Harry Fleisher
4.	Basic soap compositions	Harry Fleisher
5.	Synthetic detergents	Open
6.	Metal cleaners and degreasers	Dr. H. W. Gilbert
7.	Polishes and sweeping compounds	J. H. Bower
8.	Toiletries and creams	Miss Margaret Furry
9.	Water-softening agents	Baker Wingfield
10.	Packaging and marking	R. S. Gibson
11.	Custodial cleaners not otherwise classified	Baker Wingfield
12.	Laundering and drycleaning	R. J. Taylor
13.	Alkaline compositions not otherwise classified	Harry Fleisher

ESSENTIAL OILS

—at their best!

Oil of

LAVENDER

Oil of

GERANIUM

Roure-Dupont, Inc.

ESSENTIAL OILS, AROMATIC CHEMICALS AND PERFUME BASES

GENERAL OFFICES

366 MADISON AVENUE, NEW YORK 17, N. Y.

CHICAGO BRANCH
510 NORTH DEARBORN ST.

LOS ANGELES BRANCH
5517 SUNSET BOULEVARD, HOLLYWOOD

SOLE AGENTS IN UNITED STATES AND CANADA FOR

ROURE-BERTRAND FILS et JUSTIN DUPONT

GRASSE (A. M.) FRANCE — ARGENTEUIL (S & O) FRANCE

reau of Standards, Department of Commerce; Dr. H. W. Gilbert, Bureau of Aeronautics, Navy Department; Miss Margaret Furry (secretary) Bureau of Human Nutrition, Department of Agriculture; Baker Wingfield, Public Buildings Administration, Federal Works Agency; R. S. Gibson, Bureau of Federal Supply, Treasury Department; and R. J. Taylor, Veterans Administration.

The committee has recently initiated action on the drafting of new proposed Federal specifications for mechanical dishwashing compound, skin-protective creams, upholstery and rug cleaners, liquid glass cleaners, sodium metaphosphate, hand-soaps containing lanolin, steam-cleaning compounds, heavy-duty alkaline cleaners, and electroplating cleaners. Also under consideration is a revision of the current specification P-S-536, which prescribes standard test methods for soap products.

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Columbia Appoints Two

Columbia Chemical Division of Pittsburgh Plate Glass Co., Pittsburgh, recently appointed Walter T. Johnson as New York district sales manager, and Glen W. Green as Chicago sales representative. Mr. Johnson joined the firm's research department in Barberton, Ohio, in 1930. Following several years' service in plant production in technical service departments, he was manager of the Chicago district sales office for 3 years. Prior to the war Mr. Green was laboratory superintendent for the Duquesne Light Co., Pittsburgh. A specialist in water treatment and sewage purification, he was assigned by the Army as superintendent at Camp Detrick, Md., water plant during two war years.

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R. C. Ringgold Dies

Roland C. Ringgold, age 71, assistant to the president of Magnus, Mabee and Reynard, Inc., New York, died April 19 at his home in Shepherdstown, W. Va. Mr. Ringgold, a graduate of Johns-Hopkins University and one time director of sales for Sharp and Dohme, New York chemical house, joined MM&R in 1937 as assistant to Percy C. Magnus.

Bobrick Reopens in NY

Bobrick Manufacturing Corp., Los Angeles, announced the reopening of their New York office and warehouse, May 10th. The new office and warehouse is located at 1214 Nostrand Ave., Brooklyn 25, N. Y. where a complete stock of soap and lotion dispensers, dispenser parts, and repair facilities will be maintained. Operation of the New York branch will be under the supervision of James A. Puleo who has been identified with the soap dispenser business for the past twenty-five years.

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Golf Auxiliaries Join

The golf auxiliaries of the Chicago Perfumery, Soap & Extract Association, and the Chicago Drug and Chemical Association have joined once again in a mutual golf group to be known as the "Par-Busters." The season's tournaments have been arranged as follows: May 27th, Medinah Country Club; June 10th, Sky Crest; June 24th, Detroit (Birmingham Country Club); July 15th, Midlothian Country Club; August 12th, Olympia Fields Country Club; Sept. 16th, Elmhurst Country Club. All dates fall on a Tuesday.

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Westvaco Appoints Wyatt

W. Newall Wyatt has been appointed division sales manager in charge of dry cleaning specialties and industrial solvents, for Westvaco Chlorine Products Co., New York. Mr. Wyatt has been with Westvaco and its affiliates for more than sixteen years and, prior to rejoining the company's New York headquarters sales staff, was midwest sales division manager at Chicago for many years.

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Copra Exports Up

Copra exports from the Philippines totaled 106,450,881 kilos in the first quarter of 1947 it was announced recently by the government-owned national coconut corporation. During the first half of April an additional 18,636,929 kilos left the islands. A kilo is approximately 2.2 lbs. Chief shipments included United States, 74,989,480 kilos; United Kingdom, 5,892,848; France, 4,985,600; and Canada, 4,958,111. Other important buyers were Italy, Norway, Sweden, Hong Kong, and Netherlands. Increased exports are forecast for succeeding quarters as the first months of the year are generally too dry for maximum coconut growth.

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P&G Promotes 'Spic & Span'

Procter & Gamble Co., Cincinnati, has been giving away one prefabricated house a week, plus a 1947 Chevrolet sedan, plus 10 Eureka home cleaning outfits, plus 100 Eureka cordless irons, in a nationwide promotion on behalf of the company's new household cleaner, "Spic and Span." Contestants complete in 25 words a sentence telling why they use the product. The contest started April 13 and was to run for five weeks. First prize winners received the house together with $4,000 for lot, landscaping, etc., or if building restrictions prohibit erection in the winner's community, a cash award of $7,500 is made. A total of $600,000 will be expended for this promotion, it was stated.

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AOCS Spring Meeting

The thirty-eighth annual meeting of the American Oil Chemists' Society will be held at the Roosevelt Hotel, New Orleans, May 20-22nd, with president of the society, S. O. Sorenson presiding and Col. H. P. Newton in charge of convention arrangements. A total of 12 reports and 18 papers will be presented. Seven of the papers will be given as a symposium on "Analytical Methods." A paper that should be of interest to the soap industry is "A Study of Caustic Refining of Vegetable Oils," by R. H. Fash, Fort Worth Laboratories, Fort Worth, Texas.

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A.S.T.M. Meets in June

The fiftieth annual meeting of the American Society for Testing Materials will be held at Chalfonte-Haddon Hall, Atlantic City, June 16th to 20th. In addition to the twenty formal technical sessions, there will be more than 250 meetings of the society's technical committees. The annual address of the retiring president, Arthur W. Carpenter, is to be given at the dinner, on Wednesday evening, June 18th. Further details on the program will be released at a later date.

Miranol Chicago Plant

Miranol-Illinois, Inc., whose parent company is located at Milltown, N. J., has opened a branch manufacturing plant at 53 to 59 E. Illinois St., Chicago.

Perfumers' Society Formed

Announcement was made late in April of the formation of The Perfumers Society of the Aromatics Industry, aimed "to advance the art and science of perfumery in the United States and to encourage and promote good fellowship and professional discourse among its members."

Plans for a permanent organization were set in motion on April 19 at a dinner attended by twenty-two representatives of nineteen essential oil and aromatic houses. The organization committee consisted of William Dunney, Sr., of Ungerer & Co., Samuel Klein of Synfleur Scientific Laboratories, Inc., and George Tombak of E. I. du Pont de Nemours & Co., Inc. The following officers were elected at this meeting: President, William Dunney, Sr.; vice-president, Anthony Frascati of Firmenich & Co.; secretary, William H. Barlow of Orbis Products Corp.; and treasurer, R. B. Houk of Dodge & Olcott, Inc. Members elected to executive committee are Joseph Balsam of Givaudan-Delawanna, Inc., Fred Fielding of S. B. Penick & Co., Samuel Klein of Synfleur, and George Tombak of Du Pont.

At its initial meeting, an informal address was given by A. L. Van Ameringen, president of Van Ameringen-Haebler, Inc., in line with the Society's policy of inviting guest speakers as well as having talks by those on the roster.

Regular dinner meetings of the Society are scheduled for the third Wednesday evening of each month, except June, July and August.

Monsanto Relief Program

For the relief of its employee victims of the Texas City disaster Monsanto Chemical Co., St. Louis, has appropriated $500,000 for benefits over and above liabilities covered by insurance. An immediate payment of $1000 to each widow or real dependent began 48 hours after the disaster. Hospitalization costs of employees and dependents not covered by an employee hospitalization plan will be borne by the company. Full base salaries and wages will be paid during employee hospitalization and convalescence, and in cases of those permanently disabled, Monsanto will make payments and give other assistance over and above compensation required by law. Uninjured hourly employees, for whom work cannot be provided at present, will be paid through the payroll period ending April 27th. Thereafter, each case will be taken up by Texas City management.

George H. Rupert, sales manager, Chemical Mfg. and Distributing Co., Easton, Pa., discusses advertising plans for the company's product, "Gobs-o-suds," a new synthetic detergent. Left to right are Joseph Zill, Philadelphia food broker; John Comber, Philadelphia sales promotion; and Harry M. Ellsworth, Charles Blum Advertising Corp.

Review Synthetic Outlook

In an article on the business outlook for synthetic detergents in the April 16 issue of *Investor's Reader* it was estimated that this year's volume of synthetic detergents will top 300,000,000 lbs., which is double last year's figure. Present expansion plans call for a capacity of 500,000,000 lbs. by the end of 1948, the article stated, with prospects of sales approaching 1,000,000,000 lbs. in the not too distant future. The article discussed the advantages and disadvantages of synthetic detergents in general, touching somewhat on their history and growth, uses, and the brandname products of the various producers. It stated that the larger soap and petroleum oil industries would probably end up with the lion's share of the packaged consumer trade items but that smaller concerns should attain a fair degree of success by catering to specific detergent needs in a limited territory.

Changes at Wyandotte

Numerous changes in sales personnel were recently announced by the Michigan Alkali Division of the Wyandatte Chemicals Corp., Wyandotte, Mich. John M. Norcott, transferred from Detroit territory to the Pacific division of Wyandotte Chemicals, will be sales representative for products of both the Michigan Division and Natural Soda Products Co., a Wyandotte subsidiary. Mr. Norcott joined Wyandatte Chemicals in December 1945 following 38 months active duty with the U. S. Navy where he commanded a sea plane tender. Raymond C. Leonard replaces Mr. Norcott as Detroit sales representative. During the war he served as an AAF officer at Wright Field. Robert K. Smith is now sales representative in the Cincinnati territory. He is also a Navy veteran and a flyer. Fritz M. Zorn has been transferred from the research department to the market research department. Mr. Zorn joined the Wyandotte organization in 1939, and for the past 5 years has been engaged in pilot plant activities of the research department.

Aromatic Industry Growth

The growth of an American aromatic chemical industry was discussed in an article by R. M. Stevenson, Givaudan-Delawanna, Inc., New York, in the March issue of the company's publication, *The Givaudanian*, written on the occasion of the 25th anniversary of the organization of the Synthetic Organic Chemical Mfrs. Assn. The article explains the growth of the aromatic industry that took place between two world wars. It also points out the problems which the industry faced during the war years.

Beauty Culturists Meet

More than 40,000 beauty culturists met for the 22nd annual International Beauty Show, April 7-10, at the Grand Central Palace, New York, to witness new techniques and products of the beauty trade. A number of new soap and shampoo products were displayed.

An increase in the number of shampoos and shampoo concentrates employing a base of coconut oil was apparent from the products displayed. This is significant of the fact that supplies of coconut oil are easing and that the trade still considers the oil a fundamental base of shampoos. Of interest to the soap industry is also the fact that new cream shampoos continue to appear on the market. "Life Creme Shampoo," introduced by Rilling Co., New York, features a new kind of conditioning agent. Other products on display at the Rilling booth were "Life" creme rinse, "Life" lathering oil, and "Hi-Life" shampoo.

A number of shampoos were on display by Admiracion Laboratories, Harrison, N. J. Among them were "Admiracion Liquid Cream Shampoo," a concentrate which is diluted 1:1 before using, and "Vego-Kleen," the company's product of the saponified coconut oil type. "Coco Syrup," a clear coconut oil shampoo was on display at the booth of Chemical Materials Research Co., Brooklyn.

Ampion Corporation, Long Island City, displayed their "Slice Off" package for dispensing "Billion Bubble" shampoo, a coconut oil base soap in gel form cast in a long cylinder, covered with cellophane and packed in a cylindrical paper carton. Quaternary ammonium compounds were on display at the booth of Harley Soap Co., Philadelphia.

Fat Salvage Holds Level

The March figure for fat salvage was 11,940,000 pounds according to a report by the American Fat Salvage Committee, New York, late in April. Indications are that the April totals will amount to about the same as the figure for March and that of February which was 11,960,000 pounds. A recent survey by the Committee show that 87 per cent of the women salvaging fat save frying pan grease but only 32 per cent bother to save meat trimmings. The Committee indicates that 15 cents or more per pound is now being paid for salvaged household grease.

Apologies to Minty

In reporting the 100th year of Palmers, Ltd., Montreal importers, manufacturers and specialists in toilet goods, on page 61, April *Soap*, the name of R. Minty, director of the firm, was incorrectly spelled. Our apologies to Mr. Minty.

Canada Ups Fat Prices

Maximum prices of inedible animal fats in Canada were increased by 43 per cent in mid-April bringing these prices in line with those in effect for edible varieties, the Wartime Prices and Trade Board recently announced. Last February prices of edible animal fats were increased by 43 per cent to encourage production of such fats but no increase was granted to inedible types. According to the officials this resulted in a withholding of inedible fats from the market. Since container costs for such fats also have increased, the Board has adjusted the prices animal fat producers may charge for such containers from one-quarter to one-half cent per pound according to the size of the container. Inedible grades of tallow and hog greases—choice A white and B white, and neatsfoot oil are among the types of animal fats affected by the increase.

Asks Lanolin Soap Data

The technical committee on detergents of the Federal Specifications Board is accumulating data to form a basis for a federal specification for "powdered hand soap containing lanolin." Information is requested as to what companies produce such a product, test methods used in the evaluation of quality, and typical formulations of such brands currently on the market. Interested companies are asked to contact Harry Fleisher, chairman of the committee, Bureau of Ships (336), Navy Department, Washington 25, D. C., or forward the information to the Association of American Soap and Glycerine Producers, New York.

Bulk Builder Process

A new process for producing a fluffy soap builder of unusually light density and great bulk was recently introduced by B & E, Inc., 47 West 34th St., New York. The process provides a builder of such bulk that six regular size barrels are required for 100 pounds of the product. The builder recommended by the company for use in the process will mix mechanically with soap powders, synthetic organic and inorganic detergents and provide enough bulk for eight ounces of the mix to adequately fill a standard container the size of the "Vel" package. The company recommends the process particularly for a soap powder or detergent. For soap powders so made as to contain some glycerine or excess moisture, the builder provides a free-flowing product.

Eight ounces of a typical formulation such as 50 per cent fluffed builder, 2 per cent soda ash, 10 per cent phosphate and 20 per cent concentrated detergent will fill the standard package referred to, according to the company, and will cost only about four and a fraction cents. A unit providing 10,000 pounds of fluffy builder in 24 hours takes up about 30 by 30 feet of floor space and can be operated by one man. The machinery can be installed and in operation in three weeks.

New Pearl City Firms

The Synco Products Co. recently started business in Pearl City, Miss., bottling and distributing disinfectants, liquid soap and a number of other products. E. Cassidy Bailey is district manager of the concern which was started in Chattanooga, Tenn.

The Tri-State Linen White Corp. has also gone into business in Pearl City and will manufacture clothes bleach and other products. This corporation is owned by H. M. Patterson, G. L. Lockey, and W. A. Gregory.

Trade Practice Conference

A trade practice conference for the toilet goods industry is being held in New York City May 12th and 13th by the division of trade practice conferences of the Federal Trade Commission.

Sylviola

Exotically oriental in mood, this new Dow Aromatic Specialty contributes a note of precious woods and orris violet for modern oriental effects. Exceptionally versatile, Sylviola will serve a wide and varied range of uses. It conforms, of course, to Dow's exacting standards of odor fidelity and uniformity. A request on your company letterhead will bring working sample and complete details.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

50th Anniversary 1897-1947

DOW

Aromatics

INDISPENSABLE TO THE CREATIVE PERFUMER

Holuba Joins Essential

Stanley J. Holuba recently joined Essential Chemicals Co., Milwaukee (formerly soap division, Her-

STANLEY J. HOLUBA

cules Powder Co.) as director of research. Mr. Holuba will have charge of research for industrial soap production including "Fun" soap, a granulated household soap produced by the company. Mr. Holuba was formerly with E. I. duPont de Nemours & Co., where for 6 years he did research in synthetic fats and oils. He was also with the research, development and production department of Colgate-Palmolive-Peet Co. for 11 years, engaged in the formulating and spray drying of synthetic detergents, laundry soaps, and general sanitary compounds.

P&G Improves Drene

A new improved "Drene" shampoo formula was announced in April by Procter and Gamble Co., Cincinnati. The new formula includes three improvements: the addition of a "suds booster," an increase in the hair conditioning agent, and the blending of a new floral bouquet type perfume. The sudsing agent gives additional washing and sudsing power, the announcement states, and the increased amount of hair conditioning agent is intended to fit the needs of the dryest hair.

Lifts Soap Export Controls

The office of International Trade has modified its controls over exports of certain soap preparations by placing them under the group "K" category so that they may be shipped under general license. Removed from the positive list are medicated soaps, retail packages of shaving creams, retail packages of shaving powders, shaving cakes and sticks, and abrasive types of pastes and powders with a fat content above 10 per cent. Shaving creams and shaving powders in bulk remain on the positive list, as well as abrasive types of soap having a fat content above 10 per cent other than pastes and powders.

Oppose Adv. Allowances

Safeway Stores, Inc., Oakland, Calif., recently publicized their stand in opposition to advertising allowances and their desire to see them completely eliminated. In a speech before the Grocery Mfrs. of America last year in New York, P. D'Agostino, president of the National Association of Retail Grocers, stated that it was his belief that advertising allowances were the "worst evil" existing in the relationship between food manufacturers and retailers. In a recent letter to Mr. D'Agostino, Lingan A. Warren, president, Safeway Stores, Inc., Oakland, Calif., expressed his support of Mr. D'Agostino's view and offered the cooperation of Safeway Stores in an effort to eliminate such allowances. Mr. Warren further stated that in cases where Safeway accepts allowances for competitive protection it gives the brand promoter full value for the allowance and, although it accepts allowances for competitive reasons, it would like to see the industry-wide practice completely abolished.

Roush Joins Rogers

Chester A. Roush, Jr. became associated in April with Edgar A. Rogers, Chattanooga mechanical engineer specialist in the analysis of process plant requirements. Mr. Roush, a graduate of Georgia Tech in chemical engineering, recently returned from over three years submarine duty as a Lieutenant in the Navy. Mr. Rogers represents a number of equipment firms, among them the Mixing Equipment Co., Rochester.

Cowles Appoints Fulton

Harold F. Fulton was recently appointed technical man in the New York State territory to handle sales

HAROLD F. FULTON

and service work for the metal cleaner department of the Cowles Detergent Co., Cleveland. Mr. Fulton is a graduate of Miami University. His specialty has been in the metal working industries and during the war he was employed at the plant of Allegheny Ludlum Steel Corp., Dunkirk, N. Y.

Cans, Inc., Names Hartung

Alfred L. Hartung was recently appointed assistant sales manager of Cans, Inc., Chicago. Mr. Hartung has been in the can industry some 16 years. For the last 9 or 10 years he was with the American Can Co., Detroit, as district sales manager.

AMA Packaging Exposition

The sixteenth annual packaging exposition sponsored by the American Management Association was held at Convention Hall, Philadelphia, Tuesday, April 8 to Friday, April 11th. Running concurrently with the exposition was a three-day conference on packaging, packing and shipping. A profusion of cellophane, plastic and allied materials was apparent at the show, indicative of the continuing shortage of paper, tin, glass and wood containers. Among the subjects covered were: reducing packaging costs; the determination of proper shipping container sizes; the packaging of heavy articles; the outlook for improved machinery; and techniques of export packaging.

Oil Citronella Ceylon II, Imitation

Especially effective for perfuming household and floating soaps, insecticides, fly sprays and similar products.

Schimmel & Co., Inc.

601 West 26th Street — New York 1, N. Y.

schimmel

NEW TRADE MARKS

The following trade-marks were published in the April issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

Trade Mark Applications

GLITORING—This in upper case, bold letters for a soap compound for cleaning jewelry. Filed Nov. 5, 1945 by Cecil E. Eggleton, Minneapolis, Minn. Claims use since July 13, 1941.

GOLD SEAL—This in upper case letters within a seal-like design for glass cleaner and polish. Filed Nov. 23, 1945 by Gold Seal Co., Bismarck, N. D. Claims use since Sept., 1945.

SHO KAR—This in upper case, extra bold, black letters for liquid cleaning preparation for washing automobiles, trucks, etc. Filed Feb. 2, 1946 by Security Mfg. Co., New York. Claims use since Nov. 27, 1945.

TIS-SAY—This in upper case, extra bold, black letters for dishwashing compound. Filed Feb. 9, 1946 by Albert T. Green & Co., New York. Claims use since Jan. 1, 1946.

A.E.P.—This in upper case, oversize, extra bold letters for grease remover. Filed Apr. 29, 1946 by Affiliated Engineering Products, Norfolk, Va. Claims use since Jan. 11, 1946.

RADAR—This in upper case letters on a banner background for dishwashing powder. Filed May 13, 1946 by Johnson Laboratories, Chicago. Claims use since Oct. 12, 1943.

LYNX—This in upper case, oversize letters for soap. Filed May 31, 1946 by McKesson & Robbins, Inc., New York. Claims use since May 14, 1946.

SHASTA—This in upper and lower case, bold letters for shampoo. Filed May 6, 1946 by Procter & Gamble Co., Cincinnati. Claims use since Feb. 19, 1946.

WB-50—This in extra bold, upper case letters and figures for insecticides. Filed June 5, 1946 by Pennsylvania Salt Manufacturing Co., Philadelphia. Claims use since Feb. 21, 1946.

CYLON—This in upper case, medium letters for insecticides. Filed June 7, 1946 by American Cyanamid Co., New York. Claims use since June 3, 1946.

NIPHOS—This in upper case, bold letters for insecticides. Filed July 17, 1946 by Monsanto Chemical Co., St. Louis. Claims use since July 19, 1946.

REUTER—This in upper and lower case, reverse letters on an irregular circular background for soap. Filed June 8, 1945 by Lanman & Kemp-Barclay & Co., New York. Claims use since 1880 as to the word "Reuter" and since Sept. 23, 1924 in its present form.

TRIOX—This in upper case, bold letters for soapless cleaning compounds for general household and industrial use. Filed Nov. 9, 1945 by American Industrial Co., Indianapolis. Claims use since Apr. 1, 1944.

WOOL FLUF—This in upper case, open letters for detergent soaps. Filed Apr. 16, 1946 by Organic Chemical Co., Providence, R. I. Claims use since Mar. 1, 1946.

SNUDS—This in upper and lower case reverse, script letters on a scalloped circular background for sudsing cleaner and detergent. Filed May 9, 1946 by Help, Inc., Chicago. Claims use since Sept., 1942.

MC-1—This in upper case, extra bold, black letters for washing powder. Filed May 18, 1946 by Pennsylvania Salt Manufacturing Co., Philadelphia. Claims use since Dec., 1944.

BUBS—This in lower case, extra bold, jumbo-size letters for soapless detergent in powder form. Filed June 5, 1946 by Manhattan Soap Co., New York. Claims use since May 31, 1946.

Rear view of a stout woman bending over a washing tub for granulated soap. Filed June 10, 1946 by K. C. Working Chemical Co., Los Angeles. Claims use since Mar., 1939.

BEAVER—This in upper case, extra bold, black letters for brushless shaving cream. Filed Oct. 29, 1946 by Temple Products Co., Washington, D. C. Claims use since Oct. 16, 1946.

MOSQUITO CHASER—This in reverse letters above the drawing of a fanciful figure chasing insects with a rake for insect repellent. Filed Oct. 18, 1944 by Norma Chemical Co., Mount Vernon, N. Y. Claims use since Apr. 3, 1944.

STAPHENE—This in upper case, extra bold letters for disinfectants, germicides and antiseptics. Filed Mar. 8, 1945 by Vestal Chemical Co., St. Louis. Claims use since Aug. 24, 1938.

BLUE ISLE—This in upper case, bold letters for bubble bath preparation. Filed Mar. 26, 1946 by Jacquet, Inc., New York. Claims use since Feb. 27, 1946.

BUG BUSTER—This in upper case, jumbo letters for insecticide. Filed May 9, 1946 by Transit Grain Co., Fort Worth, Tex. Claims use since Mar. 23, 1945.

UNAPAK—This in upper case, medium, italic letters for tooth powder. Filed June 26, 1946 by Phillips Pharmaceutical Products, Inc., Darien, Conn. Claims use since May 7, 1946.

PACKER'S—This in upper case, bold letters in the form of an arc for soap. Filed June 3, 1946 by Packer's Tar Soap, Inc., Mystic, Conn. Claims use since Oct. 1, 1877.

PACKER'S TAR SOAP—This in upper case, extra bold, black letters for soap. Filed June 3, 1946 by Packers Tar Soap, Inc., Mystic, Conn. Claims use since Oct. 1, 1877.

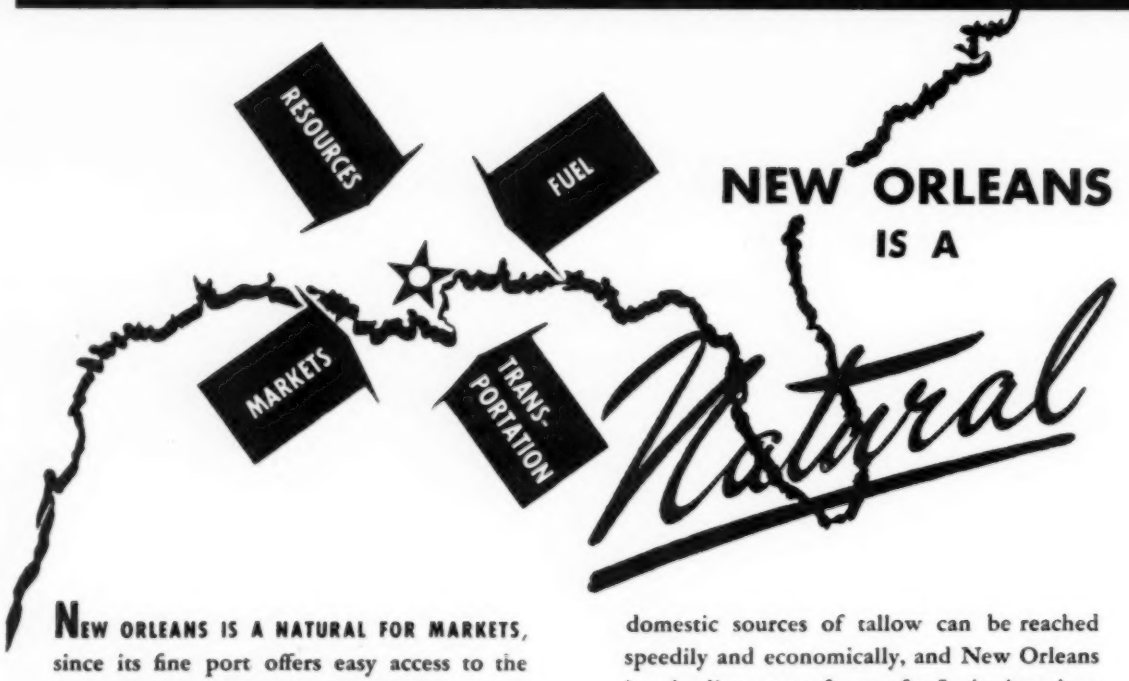
Flag and shield design for soap. Filed June 11, 1946 by Packers Tar Soap, Inc., Mystic, Conn. Claims use since 1911.

PER-EX—This in upper case, bold stencil letters for cleaning solvent for metal degreasing, etc. Filed June 13, 1946 by Detrex Corp., Detroit. Claims use since Feb. 27, 1946.

CHIFFON—This in upper and lower case, medium, script letters for toilet soap. Filed June 14, 1946 by Primrose House, Inc., New York. Claims use since Sept. 15, 1938.

KLEE—This in upper case, bold letters for eyeglass cleaner. Filed Apr.

NEW ORLEANS *WELCOMES*
The Soap & Cosmetic Industries



NEW ORLEANS IS A NATURAL FOR MARKETS, since its fine port offers easy access to the rich markets of Central and South America, Mexico and the Caribbean...since it is ideally located to serve the prosperous, expanding 10 southern states which combine 23% of the nation's population and much of the nation's buying power. Here are made-to-order markets—productive, profitable, expanding.

NEW ORLEANS IS A NATURAL FOR RESOURCES, with ample supplies of caustic soda, soda ash, salt, wood and gum naval stores and petroleum located only hours away. The leading domestic sources of tallow can be reached speedily and economically, and New Orleans is a leading port of entry for Latin American tallow. Other vital oils, such as fish, coconut and palm oils, are also brought in through the port of New Orleans, the nation's second largest—"first in efficiency."

NEW ORLEANS IN A NATURAL FOR TRANSPORTATION, offering you the coordinated facilities of 97 ship and barge lines, 7 major airlines, 9 trunk railroads, streamlined highways and a 13,000 mile network of inland waterways. Yes, New Orleans is a natural for your plant located here. Investigate now.

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MARKETS TRANSPORT RESOURCES

12, 1946 by Klee Laboratories, Indianapolis, Ind. Claims use since Feb. 8, 1946.

PEGASUS OP—This in upper case letters within semi-spherical shaped outline drawing of a woodland scene for pine oil disinfectant. Filed Dec. 14, 1945 by Columbia Chemical Co., New Orleans, La. Claims use since Sept. 28, 1945.

ACCOTOX—This in upper case, bold letters for insecticides. Filed May 1, 1946 by American Cyanamid & Chemical Corp., New York. Claims use since Apr. 17, 1946.

REMLE—This in upper case letters beneath a fanciful profile drawing, part of a rectangular design for shampoo. Filed June 13, 1946 by Imogene Shepherd, Ltd., Chicago. Claims use since July 7, 1936.

"BULL's I"—This in upper case, extra bold, black letters for shampoo. Filed July 2, 1946 by Rejuvia Beauty Laboratories, Inc., New York. Claims use since June 14, 1946.

"CROSFIRE"—This in upper case, bold letters for shampoo. Filed July 2, 1946 by Rejuvia Beauty Laboratories, Inc., New York. Claims use since June 14, 1946.

AGRITINE—This in upper case, medium letters for insecticides. Filed July 17, 1946 by Monsanto Chemical Co., St. Louis. Claims use since July 9, 1946.

NYLRINSE—This in upper case, bold letters for intimate apparel washing compound. Filed June 8, 1946 by Woolfoam Corp., New York. Claims use since June 1, 1946.

ENERGINE—This in upper case, bold letters for cleaning preparations. Filed June 12, 1946 by Sterling Drug, Inc., Wilmington, Del. Claims use since Feb. 3, 1903 on liquid dry cleaners, since 1933 on shoe cleaning preparations and since about July 1, 1937 on window cleaner.

SLUG-EM—This in upper case, open shadow letters for chemical powder for killing snails, cutworms and slugs. Filed Mar. 29, 1946 by Destruxol Corp., Ltd., Pasadena, Calif. Claims use since Mar. 15, 1946.

KICKOFF—This in upper and lower case, extra bold black letters for bubble bath and shampoo. Filed May 29, 1946 by Parfait, Inc., Chicago. Claims use since Apr. 15, 1946.

GOBS-O-SUDS — This in upper case bold letters for powdered cleaning compound. Filed May 2, 1946 by Chemical Manufacturing & Distributing Co., Easton, Pa. Claims use since Mar. 1, 1946.

LUSTERWAY—This in upper and lower case, extra bold script letters for fur cleaning compounds. Filed May 9, 1946 by Root Co., Grand Rapids, Mich. Claims use since Apr. 24, 1941.

REDEME—This in upper case reverse letters on a diamond shaped background for silver polish. Filed May 25, 1946 by J. Ennest Co., Detroit. Claims use since May 27, 1946.

PS—This in upper case, extra bold, jumbo letters with a reverse cross impinging on the "P" for brushless shaving cream. Filed June 11, 1946 by Associated Merchandising Corp., New York. Claims use since Apr. 5, 1939.

BATU—This in upper case bold letters for toilet and laundry soap. Filed June 13, 1946 by Consolidated Cosmetics, Chicago. Claims use since June 10, 1946.

PET-O-SOL—This in upper case, bold letters for insecticides. Filed Feb. 5, 1946 by E. John Kennedy, New York. Claims use since Oct. 20, 1945.

RES-I-SPRAY—This in upper case, reverse letters for insecticides. Filed Feb. 5, 1946 by E. John Kennedy, New York. Claims use since Sept. 10, 1945.

SOOT-EX—This in fuzzy outline letters for chemical preparations for eliminating soot and scale from furnaces, stacks, etc. Filed Apr. 13, 1946 by Toilet Paint & Chemical Co., Cleveland. Claims use since Mar. 18, 1946.

AUREOLE—This in upper and lower case letters for shampoo. Filed May 16, 1946 by Select Cosmetics, Chicago. Claims use since Nov. 1, 1931.

MIRALDO—This in upper and lower case, bold, script letters for shampoo. Filed May 31, 1946 by S. Pfeiffer Mfg. Co. ,St. Louis. Claims use since May 1, 1946.

Trade Marks Granted

425,320. Face and bath soaps and shaving creams. Filed by Golden Arrow Toiletries, New York, Jan. 24 1946. Serial No. 495,287. Published Aug. 13, 1946. Class 4.

425,321. Automotive and the like shampoo material. Filed by J. I. Holcomb Mfg. Co., Indianapolis, Jan. 24, 1946. Serial No. 495,295. Published Aug. 13, 1946. Class 4.

425,615. Solvent and cleaner. Filed by Petroleum Solvents Corp., New York, Feb. 1, 1946. Serial No. 495,819. Published Aug. 27, 1946. Class 6.

425,617. Cream shampoo. Filed by Civray, Inc., New York, Feb. 2, 1946. Serial No. 495,865. Published Aug. 27, 1946. Class 6.

425,632. Shampoos. Filed by Baby Touch Hair Remover Co., St. Louis, Feb. 23, 1946. Serial No. 497,061. Published July 16, 1946. Class 6.

425,649. Tarnish preventive. Filed by Katherine K. Benoliel, Philadelphia, Mar. 15, 1946. Serial No. 498,267. Published Sept. 3, 1946. Class 6.

425,050. Degreasing solvent used in vapor cleaning of metal parts, etc. Filed by Vapor Engineering Corp., Los Angeles, Mar. 15, 1946. Serial No. 498,330. Published Aug. 20, 1946. Class 6.

425,664. Insecticides. Filed by McLaughlin Gormley King Co., Minneapolis, Mar. 28, 1946. Serial No. 499,141. Published Aug. 27, 1946. Class 6.

425,674. Insecticides and fungicides. Filed by Velsicol Corp., Chicago, Apr. 3, 1946. Serial No. 499,586. Published Sept. 3, 1946. Class 6.

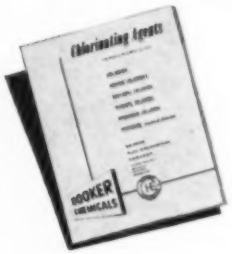
425,679. Hair shampoo and bubble bath preparation. Filed by Parfait, Inc., Chicago, Apr. 4, 1946. Serial No. 499,648. Published Sept. 3, 1946. Class 6.

425,689. Liquid glass cleaners. Filed by Unacal Products, Inc., Los Angeles, Aug. 19, 1941. Serial No. 446,377. Published May 8, 1945. Class 4.

425,697. Soap. Filed by Colonial Dames Co., Los Angeles, Sept. 27, 1944. Serial No. 474,654. Published Sept. 10, 1946. Class 4.

425,744. Glaze in liquid and paste form for polishing and cleaning automobiles, airplanes, and finished, lacquered and enameled surfaces. Filed by Strand Castle Co., Lynwood, Calif., Nov. 13, 1945. Serial No. 491,522. Pub. Sept. 17, 1946. Class 16.

For Chlorine in Convenient-to-Use Form Use Hooker Sulfur Chlorides



The Hooker Sulfur Chlorides, mono- and di-, provide convenient sources of chlorine in chemical processes where the use of elemental chlorine is not feasible. In these Hooker products you can always be sure of a carefully controlled chlorine content. The Monochloride contains a minimum of 50% chlorine, while the Dichloride has a minimum of 66% chlorine.

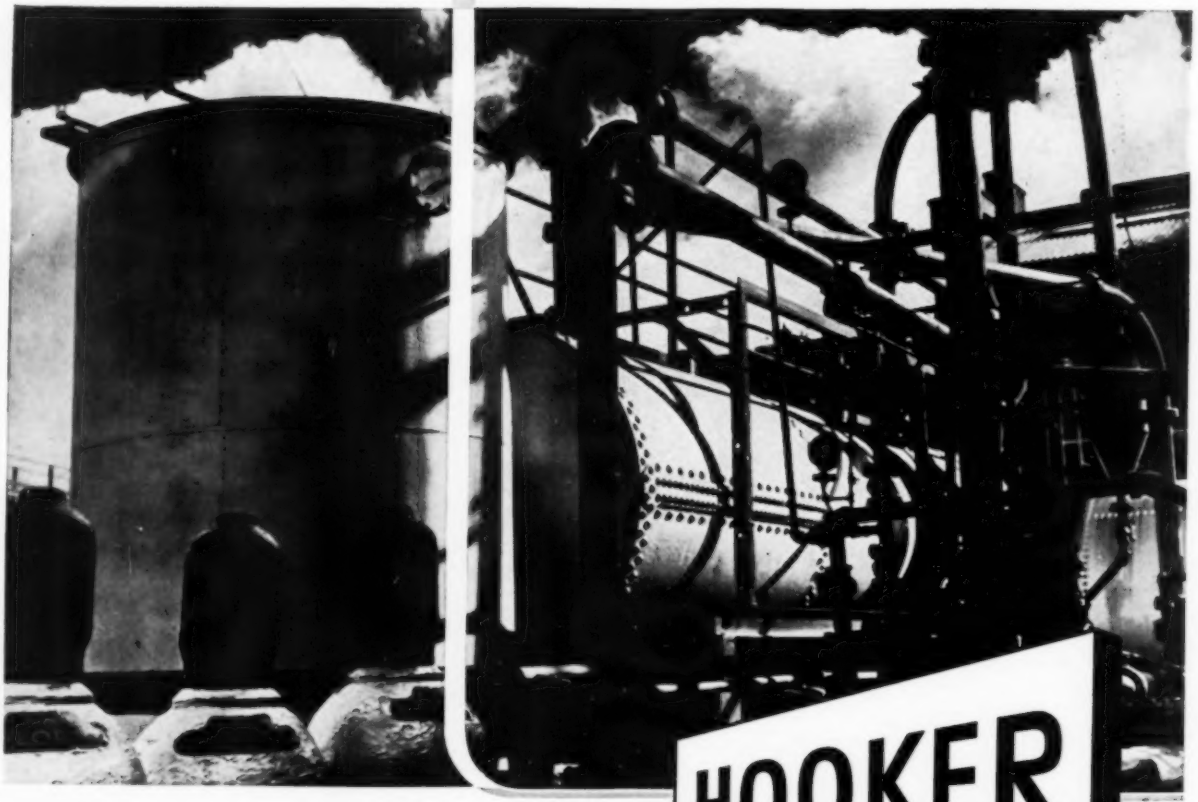
Besides the more common uses as chlorinating agents, the Sulfur Chlorides have a wide variety of possible applications in many different fields. In reactions with unsaturated hydrocarbons it is possible to introduce the sulfur or chlorine or both into the molecule.

Sulfur Dichloride may be used as a chloridizing agent in the refining of various sulfide ores; as a reagent in the manufacture of organic acid anhydrides, various rubber substitutes and other organic chemicals.

Sulfur Monochloride is also used in the manufacture of a variety of organic chemicals. It has been used as an agent for the cold vulcanization of rubber products and in the manufacture of rubber substitutes. It may be used as a solvent for sulfur and as a polymerization catalyst to increase the viscosity of fatty acids.

Hooker Bulletin 328A, "Chlorinating Agents," gives more detailed information on the possible uses of these two Hooker products as well as other Hooker Chlorinating Chemicals. Technical Data Sheets Nos. 759 and 760 describe in more detail the physical properties of the Hooker Sulfur Chlorides. Copies of these bulletins will be sent when requested on your business letterhead. Your problems in handling these Hooker Chemicals will receive the careful attention of our Technical Staff.

A part of the Hooker facilities for the production of chlorinated compounds.



HOOKER ELECTROCHEMICAL COMPANY

Buffalo Ave. & Union St., Niagara Falls, N. Y.

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Caustic Soda — Muriatic Acid — Sodium Sulfide

Paradichlorbenzene — Chlorine — Sodium Sulfhydrate

HOOKER CHEMICALS

3053

BIDS AND AWARDS

Shaving Soap Bids

The following bids were received on 1,200, 1,000, 800, 600 and 400 packages of shaving soap in a recent opening for miscellaneous supplies by the Veteran's Administration, Washington, D. C., from: Lanair Chemical Corp., Chicago, items 1 through 5, 38.75 cents; Schmidt Soap Products Co., Chicago, item 1, 39.25 cents, item 2, 38.75 cents, item 3, 40.25 cents, item 4, 40.75 cents and item 5, 43 cents; Colgate-Palmolive-Peet Co., Jersey City, N. J., items 1 through 5, 61.7 cents and Wm. Messer Corp., New York, items 1 through 5, 49.8 cents.

U.S.M.C. Disinfectant Bids

Among the bidders on 10,000 gallons of cresylic disinfectant, in a recent opening for miscellaneous supplies by the U. S. Marine Corps, Washington, D. C., were: Jas. Huggins & Son, Malden, Mass., item 2a, 11 cents, accepted, and items 2b, 93 cents, and item 2c, 11 cents, accepted; Crystal Soap & Chemical Co., Philadelphia, item 2a, 81 cents, item 2b, $1.036, 2c, 89.7 cents; Baird & McGuire Inc., St. Louis, item 2a, 73 cents, 2b, 75.75 cents, accepted, and 2c, 74 cents; Lanair Chemical Rorp., Chicago, item 2a, $2.31 and R. M. Hollingshead Corp., Camden, N. J., item 2a, 90 cents, 2b, $1.03, 2c, 96.5 cents.

U.S.D.A. Insecticide Bids

The following bids were received in a recent opening for miscellaneous supplies by the U. S. Department of Agriculture, Washington, D. C., on 350,000 gallons of insecticide: Michigan Chemical Corp., St. Louis, alt. bid of 62 cents per gallon on 150,000; Shell Oil Co., San Francisco, item 1a, 72 cents, item 1g, 72 cents; Stepan Chemical Co., Chicago, 67.5 cents a gallon on 80,000 gallons, 70 cents on 45,000 gallons and 77 cents on 100,000 gallons; U. S. Rubber Co., New York, item 1a, 92.5 cents, item 1b, 92.5 cents; Hubbell & Miller Co., New Rochelle, item 1a, $1.24 and Stauffer Chemical Co., North Portland, Ore., item 1g, $1.93, $2.05 a gallon on 55-gallon drums.

QMC Metal Polish Bids

In a recent opening for miscellaneous supplies by the U. S. Army Quartermaster Corps., New York, the following bids were received on 71,000 pints of metal polish: J. L. Prescott Co., Passaic, N. J., 9.5 cents domestic and 12.6 cents export, accepted; Liquid Veneer Corp., Washington, D. C., 12.5 cents; Grace-Lee Products, Minneapolis, $1 a gallon; Bri-Test Products Corp., New York, 12.5 cents domestic or 16.5 cents export; Oil Specialties & Refining Co., Brooklyn, 12.5 cents; Trio Chemical Works, Brooklyn, 14 cents; R. M. Hollingshead Corp., Camden, N. J., 9 cents and 14.5 cents.

Navy Metal Cleaning Bids

In a recent opening for miscellaneous supplies by the New York Navy Purchasing Office, New York, the following bids were received on 4,600 pounds of metal cleaning compound: Pacific Chemical Co., Los Angeles, 8.4 cents a pound; Cee-Bee Chemical Co., Los Angeles, 9.04 cents; DuBois Co., Cincinnati, 14.5 cents and Turco Products Co., Chicago, 1.62 cents.

Treas. Dept. Soap Bids

In a recent opening for miscellaneous supplies by the Treasury Department, Bureau of Federal Supply, Washington, D. C., the following bids were received on, item 1, (51S-1760), 6,720 pounds of soap powder for Boston, 11,200 pounds for Cleveland, 6,608 pounds for Chicago and 10,000 pounds for Washington, D. C.; and 2, (51S-1755), 100,000 pounds for Washington, D. C.: J. Eavenson & Sons, Div. Wilson & Co., Camden, N. J., item 1, 6.85 cents, Washington and item 2, 6.6 cents, Washington; Continental Soap Corp., Chicago, item 1, 7.4 cents, Cleveland, 7.25 cents, Chicago, 7.8 cents, Washington, and 2, 7.25 cents Washington; Unity Sanitary Supply Co., New York, item 1, 9.2 cents all destinations and item 2, 8.5 cents, Washington; Stevens Soap Corp., Brooklyn, item 1, 5.78 cents, Boston, 5.98 cents, Cleveland, 6.3 cents, Chicago, 5.83 cents, Chicago, and item 2, 5.8 cents, Washington; E. F. Drew & Co., New York, item 1, 8.22 cents, all destinations and item 2, 8.1 cents Washington; Imperial Products Co., Philadelphia, item 1, 12.66 cents, Boston, 12.76 cents, Cleveland, 13.01 cents, Chicago, 12.46 cents, Washington, and item 2, 12.46 cents, Washington.

Deodorant Cake Bids

The following bids were received on 864 deodorant cakes in a recent opening for miscellaneous supplies by the U. S. Army Air Corps, Dayton, O.: Uncle Sam Chemical Co., New York, 54 cents, 24 ounce cakes, accepted; Ace Janitor Supply Co., Dayton, 11 cents for three ounce cakes; Jos. E. Frankle Co., Philadelphia, 66 cents for 24 ounce cakes; Thompson's Janitor Supply Co., Dayton, 68.5 cents for a 24-ounce cake; Unity Sanitary Supply Co., New York, $1 for a 16 ounce cake and West Disinfecting Co., Cincinnati, 18.75 cents for a four ounce cake.

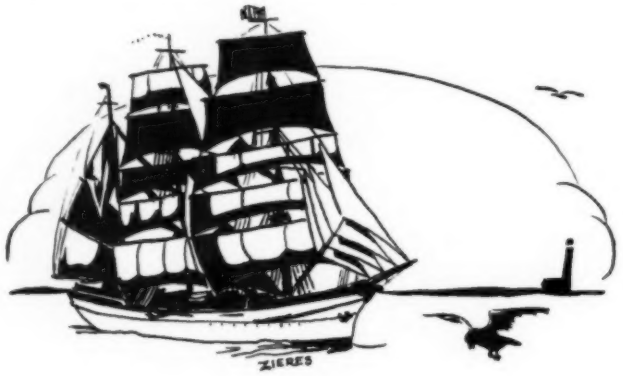
Givaudan Souvenir Book

"Quintessences," published in limited edition by L. Givaudan & Cie, Geneva, Switzerland, on the occasion of its fiftieth anniversary, is a handsomely illustrated souvenir book of high quality, tracing the sociologic, economic and esthetic progress of perfumes and their components. The book features an essay by Francis Carco, of the Academie Goucourt, on the influence of aroma on the literature of France. A concise history of the house of Givaudan is given by Xavier Givaudan. The development of synthetic aromatics is reviewed by Dr. Yves-Rene Naves. Cosmetics are discussed by Dr. Andre Barbier, with particular attention to their dermatologic aspects. He advises the cosmetic industry, in pursuit of its artistic aim, to study carefully the results of biological research and chemical synthesis. The book is in French.

W H&C Co INC

Est. 1838

Olive Oil
Neatsfoot Oil
Coconut Oil
Cottonseed Oil
Palm Kernel Oil
Stearic Acid
Oleo Stearine
Soya Bean Oil
Castor Oil
Sesame Oil
Lard Oil
Palm Oil
Corn Oil
Peanut Oil
Grease
Tallow
Red Oil
White Olein
Fatty Acids
Soap Colors
Chlorophyll
Soda Ash
Sal Soda
Talc
Caustic Potash
Caustic Soda
"CEREPS"
Superfat



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RAW MATERIAL MARKETS

As of May 1, 1947

THE price of tallow has dropped 10 cents in one month! Early in April the price of tallow was in the neighborhood of 28 cents; on the last day of April fancy grade tallow was selling for 17 cents, the price, incidentally, at which the month of May was ushered in. In addition, tallow which was not particularly available at 28 cents, is available at 17 cents. The big decline in tallow, coming as it did on the heels of President Truman's request that prices be lowered, was effected in a period of about one week. In that time a price drop of seven cents was registered.

With the price of tallow and other soap making fats and oils having receded considerably from the high levels reached during early April, soap and glycerine prices, naturally, tumbled from their high levels.

Fats and oils, typifying commodities which rose most in price since controls were lifted, have shown the largest margin of drop in the recent wave of price declines. Copra prices on the West Coast were reported recently to be down to $215 a ton, which represents a decline of $25 from previous levels. This drop is attributed to the reduction in U. S. soap prices, but is accompanied by a lack of interest on the part of buyers. They are said to be waiting on the sidelines for further price cuts, a condition which is usually characteristic of a bearish market. This abstention from buying causes prices to sag further, since buyers are interested in purchasing only at a low figure. Whether or not still lower prices are in prospect cannot yet be accurately predicted, but it is apparent that purchases that are being made are on a short term basis. Coconut oil on the Pacific Coast was said early in May to have been available at 18 to 18½ cents a pound, and even at that price range no interest was evident.

A decline in shipments of copra from the Philippines is expected during the next few months. During the first quarter of 1947, 300,000 short tons of copra were exported, which is said to be about 45 percent of all the copra exported from the Philippines in 1946. Because of the fact that coconuts do not mature rapidly in the January to June dry season, it is thought, exports will be slowed. However, total production of copra in the

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TECHNICAL SPECIALTIES

MORE and more, the application of odoriferous principles as a means of neutralizing or "blanketing" the unpleasant and sometimes offensive odors which characterize certain commercial products is becoming a merchandising factor of measurable consequence. Obviously this use of aromatics in so-called technical products differs from their use in perfumery in that the problem is *not* one of creating an aesthetic appeal, necessarily, but rather one of modifying an undesirable quality. And since the profit margin on most technical preparations is small, a major consideration in the selection of a deodorant is its economical coverage of the product's objectionable character. This must be as complete and as pleasant as possible and without interference with the operation or purpose for which the product is intended.

It has been found that certain of the cheaper or stronger essential oils—or their imitations, and sometimes even straight aromatic chemicals—fulfill this purpose quite effectively. But after years of research and cooperation with the manufacturers of many of our country's leading technical products, the conclusion seems well established that no single oil or chemical will give as complete and satisfactory coverage per dollar spent as will a compound designed specifically for a definite technical use. For this reason, the manufacturer's best procedure before adopting any one masking or odorizing agent is to have his product subjected to careful laboratory observation in order to determine the most effective and least costly means of accomplishing the desired results. Every product represents a separate and distinct problem and should be treated as such.

The accompanying list of Technical Specialties suggests but a few of the many possible products and applications wherein the neutralization or reodorization of unpleasant odor effects is being achieved economically through the use of specially prepared, low cost aromatic compounds.

GENERAL DEODORANTS

BOUQUET #149 ..... *A sweet, strong vanilla type.*
DEODORANT #9 ..... *A powerful, diffusive, covering agent.*
JAVOLLAL ..... *An effective substitute for citronella. Imparts a cleaner, finer, more appealing odor to insecticides, disinfectants and technical mixtures.*
NEUTROLEUM ALPHA... / NEUTROLEUM GAMMA.. *These are among the most widely used deodorizing materials. They neutralize and perfume at very low cost. Also useful in all preparations based upon petroleum distillates.*
SAFRELLA ..... *This is a low priced substitute for artificial sassafras which it resembles closely in odor and strength. It is used in insecticides, germicides and numerous other technical mixtures.*

SPRAY DEODORANTS

The following deodorants effectively cover the objectionable odor of the toxicant as well as of the base material . They are highly soluble and can be used alone where a mildly scented or practically neutral odor is desired, or in conjunction with a perfume.

DEODORANT #11 ..... *Vanilla type.*
DEODORANT #P-36 ..... *A sweet, powerful lilac complex, especially for sprays based upon Lethane 384 Special.*
DEODORANT #P-38 ..... *A diffuse, pleasant jasmine character.*
DEODORANT #P-40 ..... *Orange blossom type.*
DEODORANT #P-41 ..... *A lily complex.*
DEODORANT #P-43 ..... *A fruity, jasmine type.*
DEODORANT #62 ..... *A technical bouquet, possessing clean, refreshing, lasting odor. Provides good coverage.*

SPRAY PERFUMES

These compositions are especially designed to give the utmost coverage and to lend to the product a fragrant, appealing note. All are soluble, highly concentrated blends.

BOUQUET #301 ..... *A sweet, spicy bouquet of clean, refreshing character.*
CEDAR #5 ..... *Very popular cedar-pine effect.*
HONEYSUCKLE #15 ..... *A full, deep honeysuckle note.*
INDIAN HAY #6 ..... *A sweet, spicy composition carrying a grasslike note.*
KASMA #8 ..... *A lavender-geranium-petitgrain blend.*
LAVANDER #29 ..... *A distinct lavender type; gives very effective coverage.*
LILAC #28 ..... *This composition has appealing tonality and provides excellent coverage.*
LILY #20 ..... *A fragrant, refreshing note.*
MINT #5 ..... *Fresh, minty character.*
NEW MOWN HAY #7..... *A pleasant, new mown hay effect.*
PINE #14 ..... *Straight pine type; has a pungent odor.*
ROSE #64 ..... *Good odor value; economical in use.*
SWEET CLOVER #5..... *This unique composition affords excellent coverage. Has a clean topnote.*
SWEET PEA #19..... *A good, practical odor effect for sprays.*
VIOLET #22 ..... *Imparts a distinct and characteristic note.*

OTHER APPLICATIONS

We are prepared to consult with and recommend or develop masking agents and reodorants for numerous other products, such as:

CLEANING FLUIDS and NAPHTHAS, CUTTING OILS, FUEL and LUBRICATING OILS, LATEX, NATURAL and SYNTHETIC RUBBER PRODUCTS, LEATHER, PARA BLOCKS, PAINTS and LACQUERS, PLASTICS, PRINTING INKS, STARCHES, TAPE, PASTE or GLUE, TEXTILES, WAXES, POLISHES and SHOE POLISHES, etc.

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Philippines in 1947 is expected to run around 750,000 short tons, compared with 700,000 tons last year and the prewar (1934-38) average of 654,000 tons. Larger quantities of copra will be processed within the islands as the crushing capacity is expanded. Of the 750,000 tons of copra expected to be produced in the Philippines in 1947, an estimated 650,000 short tons will be exported. By 1948, when exports reach prewar levels, the total should be about 850,000 tons.

A 55 per cent increase in the 1947 allocation of Philippine copra for the United States, as compared with earlier estimates, was announced early in May by the International Emergency Food Council. This brings the 1947 U. S. allocation of copra to 680 million pounds in terms of coconut oil, which is about equal to pre-war yearly averages, although somewhat below record importations of 1940-41. In the first three months of 1947, the U. S. imported 257 million pounds of Philippine coconut oil.

Fats and oils export allocations totaling 89,300,000 pounds were set for the second quarter of 1947, it was announced late in April by the U. S. Department of Agriculture. Included in the total amount are 5,100,000 pounds allocated to export claimants in exchange for other fats and oils needed in the United States. For the second quarter of 1946, final allocations totaled 236,100,000 pounds. Because current stocks and supplies available for consumption in the United States will continue to be short during the second and third quarters of 1947, it was recommended that second quarter export allocations be kept low.

Basic commodities like alkalies and coal tar chemicals, the prices of which did not exhibit the runaway tendencies of fats and oils and other items, have not been subject to the sharp price declines in fats and oils.

Since essential oil prices have slipped off in the past few months, the market as a whole is not feeling the sharp effects of price declines that other fields are experiencing. Anise and lemongrass oil prices slipped slightly recently, while fruit oils: lemon and orange, remain at recent levels.

Carnauba wax prices have stopped their recent downward trend, temporarily, at least we are told. At the same time it was learned that a ban on candelilla wax production in Mexico may be on the way as the result of legislation soon to be enacted which would prohibit for one year the cutting or harvesting of the candelilla plant. The reason for the ban is the too rapid cutting, which has depleted the lands where the plant grows wild.

Oil Chemists Meeting

The 38th annual meeting of the American Oil Chemists' Society will be held at the Hotel Roosevelt, New Orleans, May 20-22. No further details have been announced regarding the program other than what was published in last month's issue. There will be two technical symposia, one on analytical methods and one on oilseed meals and proteins.

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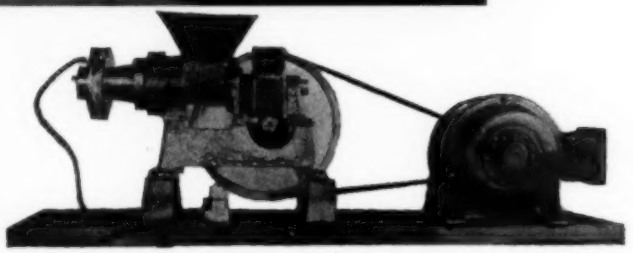

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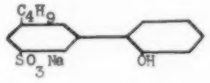
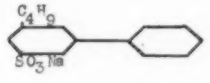
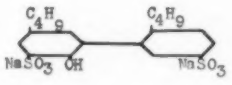
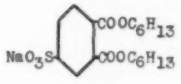
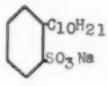
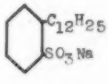
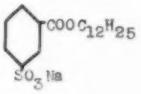
Evaluation of SYNTHETIC DETERGENTS

A STUDY has been made of a number of surface-active agents with respect to their physico-chemical properties and detergent ability. The agents studied include the following, all anion-active except No. 8, a cation-active polyamine:

AGENT	PER CENT ACTIVE	CHEMICAL NAME	FORMULA
1. Areskap-100	99	Sodium salt of 2-hydroxy-3'-butyl-5'-sulfodiphenyl	
2. Aresket-300	99	Sodium salt of 3-butyl-5-sulfodiphenyl	
3. Aresklene-400	99	Disodium salt of 2,3'-dibutyl-5,5'-sulfo-6'-hydroxy diphenyl	
4. Chemical name used	99	Sodium dihexyl sulfophthalate	
5. Santomerse-D	99	2-Decyl benzene sodium sulfonate-1	
6a Santomerse-3	99	2-Dodecyl benzene sodium sulfonate-1	
6a Santomerse-1	40	Same	Same
6b Santomerse-55	55	Same	Same
7. Santomerse-B	99	Sodium salt of 3-sulfo-dodecyl benzoate	
8. Santomerse-DT	99	Dodecyl diethylene triamine	$C_{12}H_{25}NHC_2H_4NHC_2H_4NH_2$
9. Santomerse-TIH	99	Dodecyl disodium succinate	

All are solids except 8, a liquid. The products were evaluated in terms of acid stability, alkali stability, metallic-ion stability, surface and interfacial-tension values, wetting power, lather value, organic solvent solubility, and detergency by Launderometer tests. Products 1 through 6 were stable in 10 per cent sulfuric acid, while 7 through 9 were decomposed; all nine were stable in 0.1 per cent sulfuric acid. Resistance to acid decreased from 9 through 7, respectively, 9 being the least stable. Acid-stable agents are used for acid-dyeing baths and in carbonizing liquids. All nine agents were chemically stable in 25 per cent caustic soda solution, although 1 was partially salted out, and 2 through 9 were all salted out. No. 1 was the most soluble in alkali, an 0.8 per cent solution being soluble in 21 per cent of caustic soda solution. Such an agent should be suitable in a mercerizing bath and in the manufacture of viscose yarn.

Stability Toward Metals

A NUMBER of metallic ions were chosen for their effect on the agents for the following reasons: Calcium and magnesium because they are responsible for water hardness; copper and nickel because of possible contamination from processing equipment; aluminum and iron salts because they readily form insoluble salts and any agent stable to them should prove useful for many purposes; barium was chosen because sulfates and even sulfonates are precipitated in its presence; heavy-metal salts because they are representative of lead contamination; zinc salts since they are somewhat amphoteric in nature and are present in certain processing baths. In the following table, 100 represents complete stability in terms of the test, while smaller numbers represent correspondingly lower degrees of stability.

The most stable agent with respect to metallic ions is seen to be "Santomerse DT," but it should be recalled that DT is stable only to alkali and to very mild acid, so that its greatest utility will be in alkaline baths. "Santomerse B" appears to be next

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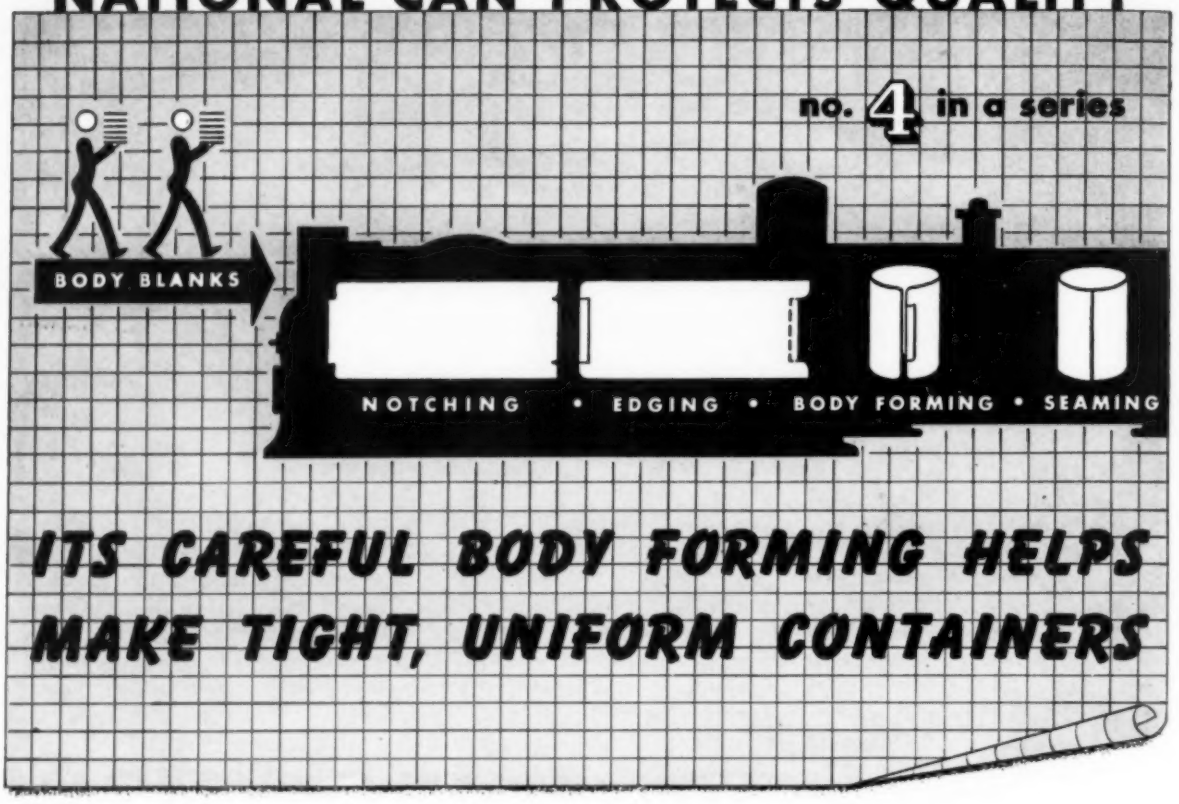

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Sample No.	Stability toward: Ca	Mg	Cu	Al	Ba	Fe	Pb	Zn	Ni
1. Areskap 100	100	100	88	8	20	17	33	100	100
2. Aresket 300	14	100	100	6	9	7	21	100	100
3. Aresklene 400	23	100	100	6	15	27	35	100	60
4. Dihexyl sulfophthalate	40	100	100	8	20	16	40	100	100
5. Santomerse D	17	100	70	6	14	15	34	100	100
6. Santomerse No. 3	16	100	78	6	18	17	30	39	37
6a. Santomerse No. 1	31	100	100	9	22	29	20	100	100
6b. Santomerse No. 55	12	53	73	6	8	6	9	49	39
7. Santomerse B	100	100	100	17	19	15	42	100	100
8. Santomerse DT	100	100	100	46	100	24	100	100	100
9. Santomerse TIB	5	100	10	7	7	6	13	7	12

most stable and can be used in either mildly alkaline or acid media. When comparing "Santomerse 3" against "Santomerse 1," it is seen that sodium sulfate exerts an effect other than as a mere diluent: the presence of sulfate increases the stability toward metals. When tested for their ability to *disperse* lime soaps, the agents were effective in approximately the following decreasing order: "Santomerse DT," "Santomerse B," "Santomerse No. 3," dihexyl sulfophthalate, "Santomerse D," "Santomerse No. 1," and "Santomerse No. 55;" the other agents were ineffective for this purpose.

Surface Activity

THE tests for stability have nothing to do with surface-active properties. Surface and interfacial-tension values, and wetting power, however, show relative surface activity:

Agent (0.25% conc.)	Surface Tension (dynes/cm)	Interfacial Tension (dynes/cm)	Wetting Time by Draves-Clarkson Test (seconds)
1. Areskap 100	30.0	1.3	38.7
2. Aresket 300	32.2	4.9	23.1
3. Aresklene 400	25.6	1.8	6.6
4. Dihexyl sulfophthalate	30.2	7.2	3.8
5. Santomerse D	32.0	4.5	5.4
6. Santomerse No. 3	31.7	4.8	5.7
6a. Santomerse No. 1	29.9	2.5	16.0
6b. Santomerse No. 55	31.0	2.5	10.7
7. Santomerse B	32.8	6.7	39.6
8. Santomerse DT	25.5	0.1	38.8
9. Santomerse TIB	24.0	3.6	6.4

The lower the values for surface tension and for interfacial tension against "Nujol," the greater the surface activity; the fewer the number of seconds required for wetting time, the greater the wetting power. The figures show that general surface activity as shown by ability to lower surface and interfacial tension, is not correlated with wetting ability. This is to be expected from the variation in chemical structure as shown in the first table. "Santomerse DT" is the most highly surface-active agent, while dihexyl sulfophthalate is the best wetting agent. Comparison of the activity of "Santomerse No. 3" (99 per cent active) and "Santomerse No. 1" (40 per cent active, 60 per cent builder) illustrates the interesting and valuable effect produced by the addition of sodium sulfate—also sodium chloride—to surface-active agents. Surface activity is increased by addition of sodium sulfate. This effect may be attributed at least in part to orientation of the surface-active agent at the interface. Presence of sodium sulfate decreases wetting ability, however. "Santomerse D," and "Santomerse No. 3" are also good wetting agents, although not as effective as the phthalate derivative.

Detergency and Lathering

WITH the aid of the Launderometer, detergency tests were made using standard-soiled swatches, and reported in terms of per cent soil removed. Soil removal for "Santomerse No. 1" was arbitrarily set as 100, and the other values reported in comparison with this. Higher numbers showed even better detergency, and lower numbers correspondingly less detergency. The degree of lathering and the pH of the solutions were also determined. The figures for lather determinations are for the height in centimeters of the lather formed under standard conditions and allowed to stand for 5 minutes, therefore giving the amount of relatively stable lather formed.

The results show "Areskap," "Aresket," and "Aresklene" to be very poor detergents, "Santomerse" No. 3, No. 1, No. 55, and DT to be very good detergents. Some agents are better in hard water than in soft water, notably "Santomerse" B and DT. When "Santomerse" No. 3 is compared with No. 1, the presence of sodium sulfate appears to decrease detergency slightly. "Santomerse" DT and No. 3 give the best detergency in hard water. Results on washing in hard water correspond only roughly to lime-stability and lime-dispersal tests.

Most of these agents show good lathering power, dihexyl sulfophthalate being the best in soft water, "Santomerse No. 3" in hard water.

The pH of all these agents is neutral except for "Santomerse DT," which is mildly alkaline. (It is possible that this degree of increased alkalinity is a factor in increasing the effectiveness of the agent in surface activity and detergency.)

Solubility in Solvents

WHEN the agents were tested for solubility in organic solvents, all except dihexyl sulfophthalate and

(*Turn to Page* 151)

Detergency and pH at 0.2% concentration, and Lathering Power at 0.05% concentration:

Agent	Detergency on basis of No. 6a: Soft water 50 ppm $CaCO_3$	Hard water 300 ppm $CaCO_3$	Lathering Height in cm. and corresponding pH: Soft water 50 ppm $CaCO_3$		Hard water 300 ppm $CaCO_3$	
1. Areskap-100	25	14	7.2 cm.s	7.3 pH	8.7 cm.s	7.4 pH
2. Aresket-300	33	14	12.7	6.5	9.5	6.4
3. Aresklene-400	16	31	6.4	6.9	6.3	6.8
4. Dihexyl sulfonate	85	81	15.9	5.6	11.2	5.4
5. Santomerse-D	89	104	12.9	6.2	12.1	6.4
6. Santomerse-3	104	111	12.8	6.3	12.8	6.3
6a. Santomerse-1	100	100	15.1	6.6	9.4	6.6
6b. Santomerse-55	91	91	14.9	6.6	11.2	6.6
7. Santomerse-B	79	99	11.8	6.6	11.5	6.5
8. Santomerse-DT	94	115	10.8	9.1	9.4	9.4
9. Santomerse TIB	54	97	none	5.8	none	5.8

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Oilseed Extraction

The methods used for processing oilseeds are practically innumerable. Solvent extraction is only one of several processes available to the oil miller, but in its modern form it is the most efficient so far developed. Extraction suffers limitations, however, as do all the other processes, and it can be applied satisfactorily only if these limiting factors are thoroughly understood. Although it has proved highly successful in the soybean industry, its use for processing linseed, cottonseed, peanuts, and other oilseeds under the conditions peculiar to the United States still presents many unsolved problems. Solvent extraction in this country appears destined to expand not only in the oilseed industries where it is now used but also in new fields where other methods have been used exclusively in the past. W. H. Goss. *Oil & Soap 23*, 348-54 (1946).

Hydrolysis of Phosphates

When sodium tripolyphosphate hydrolyzes, one mole each of ortho- and pyrophosphate is formed. In aqueous solutions of hexametaphosphate, two reactions take place simultaneously; part is hydrolyzed directly to orthophosphate, and part is depolymerized to trimetaphosphate which then hydrolyzes slowly to orthophosphate. In the hydrolysis of trimeta- to orthophosphate, tripolyphosphate is formed as an intermediate. In the presence of an excess of alkali, trimetaphosphate is converted entirely to tripolyphosphate. Pyrophosphates hydrolyze directly to orthophosphates. Hydrolysis data confirm the fact that tetra- and septaphosphates are mixtures.

Temperature greatly affected the rate of hydrolysis. Hydrolysis rates were much slower at 70°C. than at 100°C. Tripolyphosphate hydrolyzed more slowly than hexametaphosphate and was noticeably more stable in the presence of excess alkali. R. N. Bell. *Ind. Eng. Chem. 39*, 136-40 (1947).

Decolorizing with Soaps

Hydrated preformed soaps can be used for decolorizing oils. To prepare such soaps, add five parts by weight of stearic acid and 15 of oleic acid to 60 parts of decolorized cottonseed oil, stir until dissolved, adjust the temperature to 50°C. and add 26 parts of a 13 per cent aqueous solution of caustic soda slowly with stirring. Next dissolve 20 parts of decolorized palm-oil fatty acids in 60 parts of decolorized cottonseed oil and heat. Adjust the temperature to 50°C. and add caustic soda as before. These products can be used for the decolorization. The solid fatty acid should preferably comprise 25 per cent of the mixture and the unsaturated fatty acid should be over 30 per cent of the solid acid in the mixture.

The soap is used as follows: Wash crude cottonseed oil with about 10 per cent of its weight of water at 45°C. Add five per cent by weight of soap concentrate prepared as above, mix vigorously, and pass through a restricted opening under pressure. Remove soaps by centrifugal separation. Corn, soybean, and peanut oils may be treated analogously. F. M. Sullivan. U. S. Patent No. 2,408,454.

Bleaching and Stabilization

"Hydrobleaching" is a process in which oils are decolorized and stabilized by partial hydrogenation in the presence of a mixed metal catalyst as the oxides. The color of the treated oil is almost water-white. It is then hydrogenated to an iodine number of 70 with a nickel catalyst at atmospheric pressure and 150°C. This is followed by filtration, treatment with fuller's earth, and deodorization. W. J. Paterson, to Lever Brothers Co. U. S. Patent No. 2,410,102.

Perfume Fixatives

The good perfume fixatives are very hard to get these days, if available at all. Diethyl phthalate in perfumes, used as a denaturant of the alcohol, has a greater fixing power than commonly supposed; compounders would be well advised to use more than the minimum requirement of this. In making up a perfume consisting of essential oils, diethyl phthalate, water, and alcohol, it is well to mix the oils and phthalate together and let them remain for a day before introducing the remaining ingredients. When water is added to this mixture, followed by alcohol, an emulsion is formed which remains stable until cleared by addition of the rest of the alcohol.

Addition of one essential oil to fix another is not usually efficacious. With lavender however, a certain amount of fixation is attained by the judicious use of oil of spike with the flower oil. Also there is musk xylol, a synthetic crystalline compound which darkens on exposure to ultraviolet light.

This compound dissolves readily in essential oils on warming and does not precipitate on addition of diethyl phthalate. It is itself nearly odorless, has no effect on the basic fragrance of the oils, and certainly has fixative properties. Its main drawback is that the perfume tends to darken with age and may develop a reddish tinge after a few weeks. *Perfumery & Essential Oil Record 37*, 309 (1946).

Flavor Reversion

The oxidation rate of soybean oil may be varied over a considerable range without influencing the organoleptic evaluation of the degree of flavor reversion. Even when the rate of oxidation is greatly reduced by the use of an inert atmosphere, there is no diminution in the tendency to revert. On the contrary, with low oxygen concentrations, a type of reversion is produced that is more persistent in taste than that resulting in air or oxygen. C. Golumbic, C. J. Martin, and B. F. Daubert. *Oil & Soap 23*, 360-1 (1946).

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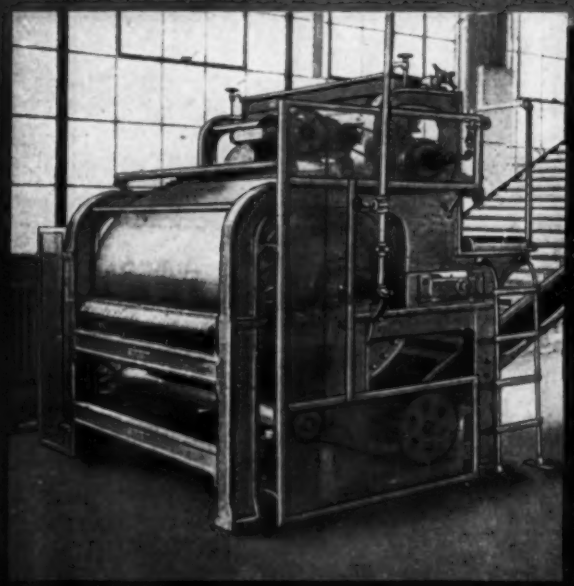

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PRODUCTION Clinic

By DR. E. G. THOMSSEN, PH D

IN recent years the vacation problem has multiplied in factory operations. Factory employees now get vacations as well as office help. Most of us older heads remember the days when even the main holidays like May 30th or July 4th were celebrated with half a day off. The lesser holidays were just a myth and we worked on such minor holidays just as we did any other day. Our work day, too, was nine to ten hours long, and only an hour shorter on Saturdays. Vacations in those days among factory workers were practically unheard of. With the office workers it was different. They received their vacation with pay and also worked shorter hours. It was hard to swallow. These earlier experiences have impelled us to plug for vacations for factory workers. They are a real pleasure in life when properly taken and break up the monotony of constant work, just as the shorter week makes our tasks more attractive.

Unfortunately vacations are not always given due consideration by production executives. They are often considered just another problem and gotten out of the way as quickly and conveniently as possible. As a result we find factory employees taking their time in various ways. Some like to take off an additional day now and then throughout the year, some split their vacations up in two or three brief periods, some ask to stay on the job and draw double wages for the vacation period, and others ask for a few more days off at their own expense. Most workers take a vacation that is beneficial only if it is forced on them. To get the vacation period out of the way and obviate these variations many concerns close down entirely for a period. This procedure, while efficacious, is not generally feasible.

A constructive way of handling the problem of vacations is to plan ahead for the employees, consulting them, or where large numbers are concerned, the foremen, as to their desires. When all the data is in and well in advance of vacation time, office letters are sent to each employee telling him just when to take his time off. Some companies include a printed slip suggesting recreations and inexpensive trips where the family may have a pleasurable time. This advice may seem unnecessary but many of the older men who now get vacations just do not know what to do with their leisure time. Recently the writer met a former employee who was on his vacation. To our query as to how he was enjoying it, he answered that he did not know what to do with himself and wished he was back at work. Such conditions are not uncommon. Since vacations are given to revivify one, industry should, if for selfish reasons alone, cash in more on the expense involved. Proper advice as to how to spend them is helpful. When carried out in such a way as not to appear to dictate to an employee how he should spend his holiday period but evincing an interest in the occasion, better employee-employer relationships may also result.

From Our Advertising

In reading the advertising pages of a recent issue of *Soap*, several interesting items that may have escaped the readers of the text pages came to our attention. Some are new, others are older but still important. We believe that they merit special comment.

A striking advertisement, in view of the present shortage of alkalis, is that of Axton-Cross Co., Cheshire, Conn. This company offers to compound formulas for dry alkali mixtures at a low cost. They state they maintain stocks at their plant and will blend a barrel or a carload.

Scottdel, Inc., Dept. D, Swanton, Ohio, feature their chemical mixers. These speed up production of dry granulated products and soap powders by speedy mixing action. They feed at the floor level, the material is conveyed into an elevated hopper or into top of the mixer and the discharge may be located at a convenient height for barrels, bags or trucks.

The George G. Rodgers Co., New York, calls attention to their new Rodgers Batch Mixer. This machine comes in seven different sizes up to 4,000 lbs. capacity. It will completely mix two or fifty ingredients at low cost. Belt driven or direct connected motor drives are available.

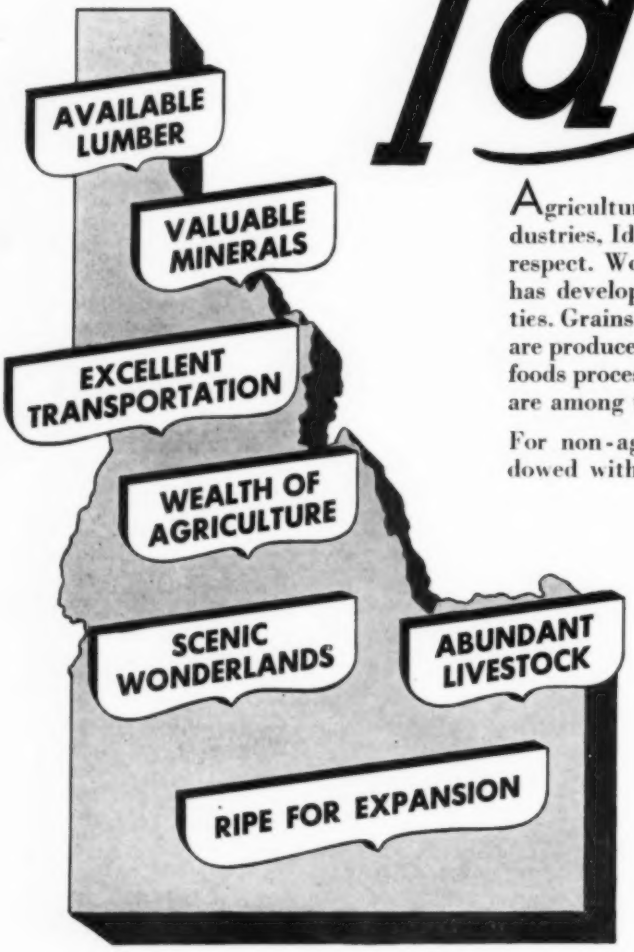
The Sprayer Corporation of America, Chicago, illustrate their liquid insecticide power sprayer which will throw an insecticide spray distances of from 18 to 40 feet. Types adopted for space spraying or for residual sprays are available in various models and sizes.

The Oil States Petroleum Company, New York, set forth the merits

UNION PACIFIC

TREASURE MAP OF INDUSTRY

Idaho*

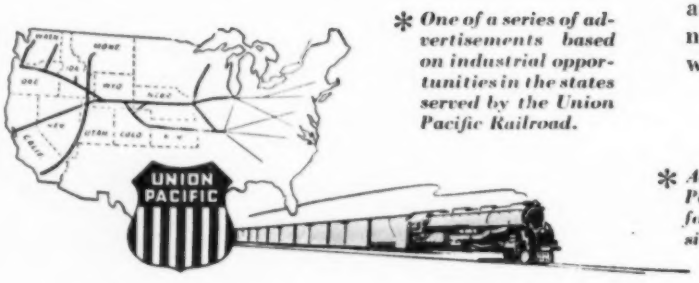


Agriculture being the life-blood of many industries, Idaho is particularly fortunate in that respect. World-famous for the Idaho potato, it has developed many other agricultural activities. Grains, vegetables, fruit . . . cattle and sheep are produced in abundance. Dehydration, frozen foods processing, dairying, canning and packing are among the state's flourishing industries.

For non-agricultural industries, Idaho is endowed with rich veins of minerals. Numerous manufacturers of stone, clay and glass products have established plants in Idaho. Lumber for building and wood products is available. Unsurpassed rail transportation is provided by Union Pacific.

As a vacation region, Idaho has a wonder-world of its own in Sun Valley . . . year-'round sports center . . . the world famous primitive area . . . and in the scenic surroundings of Payette Lake.

Idaho is a young thriving state, ripe for further industrial development. It offers good living and working conditions, good schools, splendid cultural advantages . . . and its energetic citizens assure newcomers of a true western welcome.



* *One of a series of advertisements based on industrial opportunities in the states served by the Union Pacific Railroad.*

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UNION PACIFIC RAILROAD

THE STRATEGIC MIDDLE ROUTE

of their refined semi-liquid petroleum sulfonate "Soliol," as a powerful emulsifying and wetting agent. Among its uses are the cleansing of metals, glass and dairy equipment; in insecticides and for industrial cleaners. Active ingredients are varied to meet the customer's requirements. It is stable to acids, alkalis and hard water.

The Moisture Teller advertised by Harry W. Dietert Co., Detroit, is a handy piece of laboratory equipment and not at all expensive. We used one for many years for determining moisture in many products and found it accurate and convenient. The apparatus does not lose its calibration. It comes in portable models that handle from one to 2,000 gram samples. They are compact, self-contained and sturdily constructed.

The U. S. Bottlers Machinery Co., Chicago, have long been known as manufacturers of liquid filling and handling equipment like pumps, fillers, cappers, filters, conveyors, bottle washing and drying equipment. They feature their U. S. Rotary Vacuum Filler that handles up to 130 containers per minute and in bottle sizes up to a gallon. This machine which fills any type of liquid can be operated at variable speeds which is a decided advantage where flexibility is desired. The Company has issued a new booklet entitled "Rotary Filler Details" which may be obtained by writing to them at Chicago.

The Filtrol Corporation, Los Angeles, tell the story of the use of their Filtrol absorbants. Several well known brands of shortenings that depend upon Filtrol for bleaching and purity are cited. The Company points out that their absorbant has great bleaching power, attains maximum decolorization, offers low oil loss in the press cake and is low in cost. These qualifications recommend it for use in refining fats and fatty acids.

The Heat and Power Company, New York, offer a line of tanks and pressure vessels for immediate delivery. Blue prints showing complete construction details are available upon request.

Last month we mentioned the interesting experimental work in growing derris at the Vegetable Crops Laboratory of the Florida State Agriculture Department, Bradenton, Florida, and how the leaves of the plant were being attacked by an insect at that time unidentified. They have just heard from Washington that the insect attacking the *Derris Eliplica* is a moth, *selenis monotropo*, family *phalaendia*.

LOTION DISPENSER—The Bobrick hand lotion dispenser presents a new method for applying lotions. Installed in hotels, restaurants, filling stations and stores, the new dispenser is designed for convenience of patrons in women's wash rooms and other appropriate places. The working parts of this wall type dispenser are of durable stainless steel. The dispenser, manufactured by Bobrick Mfg. Corp., Los Angeles, dispenses many of the numerous brands of protective or germicidal lotions obtainable in bulk at moderate cost.

New Alrosene Bulletin

A three-page technical bulletin describing "Alrosene 31" was recently released by Alrose Chemical Co., Providence, R. I. "Alrose 31" is a modified alcohol sulfate detergent and is described by the company as a free-flowing, off-white, granular powder with a pleasing soap-like odor. The bulletin describes in detail the solubility, foam, wetting, and detergency of the product, as well as its applications in the textile and household detergent fields.

New Hooker Booklet

A new edition of Hooker General Products List, Bulletin 100, was recently published by Hooker Electrochemical Co., Niagara Falls. Several new products and brief descriptions of various chemical processes and facilities which Hooker has available for industry are included in this new general products listing.

TGA Oleic & Castor Specs

New standards were announced in April for oleic and castor oils by H. D. Goulden, director of the Board of Standards of the Toilet Goods Association, New York. Specification No. 24 for oleic acid defines it as a very pale yellow liquid obtained from tallow and other fats, consisting chiefly of $CH_3 (CH_2)_7 CH{:}\ CH\ (CH_2)_7 CO\ OH$. *Solubility*: Miscible in all proportions with chloroform, benzene, ether and ethanol and insoluble in water. *Specific gravity* 0.890 to 0.895 at 25° C. *Titer*: 10° C. *Mineral acids*: none. *Iodine value*: 86-95. *Acid value*: 190-203. *Mineral oil*: A solution of 1 ml. oleic acid, 0.5 gms. sodium carbonate, and 30 ml's distilled water; after boiling together for 30 minutes, should be clear while hot. *Saponification value*: Not more than 5 greater than the acid value. *Unsaponifiable matter*: 2.5 per cent maximum. *Ash*: none. *Color*: Light grade—15 yellow, 1.5 red maximum. Darker grades—as specified by the buyer.

Specification No. 25 for castor oil defines it as a very pale, yellow, almost colorless cold-pressed fixed oil obtained from the seed of *Ricinus communis Linné* (*Fam. Euphorbiaceae*). *Odor*: Very faint characteristic odor with no suggestion of rancidity. *Taste*: Very faint but characteristic taste. *Distinction from most other fixed oils*: Castor oil is only partly soluble in purified benzin (most other fixed oils), but it yields a clear liquid with an equal volume of alcohol (foreign fixed oils). *Specific gravity*: 0.945 to 0.965 at 25° C./25° C. *Saponification value*: 179 to 185. *Iodine value*: 83 to 88. *Acid value*: 3 maximum. *Color*: 5 yellow maximum, 1 red maximum.

New National Can Office

The National Can Corp., New York, announced in April the opening of a new sales office in Chicago. The office will service the general and sanitary line trade in the west.

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Dishwashing Studied

A survey of dishwashing practice and performance was carried out in 1005 restaurants in New York City and was reported in an article on dishwashing practice and effectiveness by H. L. Kleinfeld and Leon Buchbinder, Bureau of Food and Drugs and Laboratories, Department of Health, New York, in the April 1947 issue of *American Journal of Public Health*. The quality of dishwashing as measured by the swab rinse method is found in general to be very poor (in the swab rinse test, the bacteria count is taken of a swab sample from the utensil after it has been rinsed). Hand washed glasses and cups met the bacterial standard of no more than 100 colonies per utensil in only 10 per cent of instances, whereas the analagous figure for the same utensils washed by machine was 36 per cent. Since only two-fifths of machine washed samples passed the test, it is evident that much improvement is needed both in operation and in machines. Hand-washed spoons and forks were found to pass, in 36 per cent of the instances, which was about the same as the percentage of machine-washed spoons and forks.

It was also noted that both hand and machine washing in cafeterias was generally inferior to that in waiter service restaurants and luncheonettes. It was found that about 88 per cent of the establishments use hand methods mainly and that 17.5 per cent use machine methods mainly.

In another article by W. L. Mallmann, Paul DeKoning, and Leo Zaikowski, Michigan State College, entitled "Critical Study of Machine Dishwashing," the authorities recommend a rinse period of 10 seconds at 170° F. in the case of single tank dishwashing machines. A technique using *M. Caseolyticus* as a test organism is presented for measuring time and temperature of rinse. Two methods of determining thermal death points of bacteria are presented. A food soil for measuring the efficiency of dishwashing machines is also presented. A bacteriological method of measuring washing efficiency of dishwashing machines is outlined and a test plate for checking dishwashing machines for use in sanitariums is described.

Alkyl Aryl Sulfonates

Unsaturated aliphatic hydrocarbons, particularly cracked mineral oils containing 10-35 per cent of unsaturated compounds and boiling at 150-300° C., are treated with benzene, toluene, or xylene in the presence of aluminum chloride as catalyst. The resulting alkylated benzene is sulfonated. The sulfonate containing free sulfuric acid, is separated and treated with sodium bicarbonate to give a paste which when dried contains 40 per cent of active material. Dry hydrogen chloride, hydrogen bromide, or bromine may be used as an additional condensing agent to increase the yield. E. Zerner and Wm. Kaplan, to Sun Chem. Corp. U. S. Patent No. 2,413,161.

Discoloration Prevented

By prior treatment of a polyphenol antioxidant, either alone or dissolved in a fat, with alkali and subsequent treatment with an acid stronger than acetic so that traces of acid-reacting materials remain, the discoloration produced by iron, copper, or other multivalent metal can be reduced. This is particularly effective for gum guaiac. H. C. Black, to Industrial Patents Corp. U. S. Patent No. 2,408,904.

Calabash Seed Oil

Analysis of the oil shows that the composition and characteristics are similar to those for peanut and olive oil except for the presence of a small amount of linolenic acid in the calabash oil. B. A. Smith and F. G. Dollear, *J. Am. Oil Chemists' Soc. 24*, 52-4 (1947).

Surface-active Amines

Condensation products are prepared by acylation of a hydroxy polycarboxylic acid with the anhydride of a lower fatty acid, and treating the product with a partial amide of a higher fatty acid and a polyamine. The agents produced have detergent and lathering properties. B. R. Harris. U. S. Patent No. 2,409,275.

Testing Soaps for Silica

Silica in soaps and soap flakes can be determined by an acid digestion method. The soap is decomposed by nitric-perchloric acid, with the aid of a potassium permanganate-potassium dichromate catalyst. Silica is then dehydrated, filtered off, and determined in the usual manner. The results are similar to those obtained by the hydrochloric acid dehydration method. L. Silverman. *J. Am. Oil Chemists' Soc. 24*, 13-14 (1947).

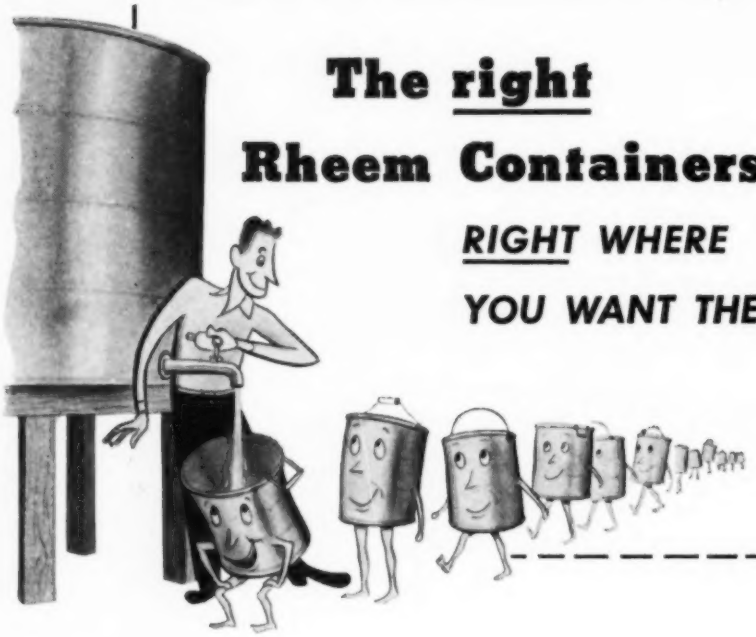
Oil Storage Conditions

An accelerated storage test, consisting of exposure of oil to artificial light in sealed containers, proved satisfactory for obtaining preliminary results on the action of antioxidants on corn and cottonseed oils stored in sealed containers and exposed to diffused light. The induction period, as determined by incubation in the presence of air and the determination of peroxides, did not correlate with the actual keeping quality of the oils under the above conditions.

The most important factors governing the potential keeping quality of an oil were its original quality and exposure to light. A satisfactory storage life can be obtained if fresh corn or cottonseed oil is packed under conditions which prevent the inclusion of air, stored at room temperature or lower, and protected from light. J. E. W. McConnell and Wm. B. Esselen, Jr., *J. Am. Oil Chemists' Soc. 24*, 6-13 (1947).

Resin Acid Separation

Fatty acids can be esterified with lower aliphatic alcohols without a catalyst, when the mixture of both is heated in a closed vessel to a suitable temperature. With this method, the fatty acids of tall oil can be completely esterified before the slower reacting resin acids are attacked, and the latter can thus be separated. The esterification time depends on the excess of alcohol used and on the temperature, which may be as high as 200° C. F. H. Gayer and C. E. Fawkes, to Continental Research Corp. U. S. Patent No. 2,411,536.



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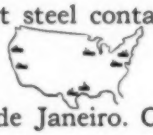
Rheem's world-wide network of steel container plants was put together to bring you economical, on-the-spot steel container service. That's why there are a dozen Rheem plants in the U. S.  and half a dozen more scattered all the way from Singapore to Rio de Janeiro. On-the-spot service is *built-into* this Rheem network.

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Making Fatty Alcohols

An improved general method has been developed for reducing fatty esters by means of metallic sodium. Nearly quantitative yields of alcohols, based on both sodium and ester, are obtained, especially from fatty-acid esters of higher molecular weight.

In the classical sodium reduction procedure an excess of sodium is ordinarily added to a solution of the ester in ethyl alcohol, which functions both as solvent and as reducing alcohol. The improved method uses theoretical amounts of both sodium and reducing alcohol, and the reaction is carried out in an inert solvent such as xylene or toluene. The method is especially applicable to the preparation of unsaturated alcohols not easily made by catalytic hydrogenation. It compares favorably with catalytic hydrogenation of saturated, higher fatty acid esters because of the simplicity of operation and equipment. The process can be carried out at ordinary pressure. V. L. Hansley. *Ind. Eng. Chem. 39*, 55-62 (1947).

Soaps in Synthetic Rubber

At first, distilled myristic and palmitic acids from spermaceti were used for making synthetic rubber. These were replaced by distilled myristic acid from coconut fatty acids. When the supply of this became short, soap made from selectively hydrogenated tallows and greases was used. Future developments point to the use of highly purified fatty acids or soaps having a definite ratio of the various fatty acids present. Crystalline acids are quite satisfactory and uniform in their activity. For example, crystalline palmitic acid would be desirable in certain cases while for others a crystallized high-purity oleic acid free from polyunsaturates would be ideal. S. L. Demon, *J. Am. Oil Chemists' Soc. 24*, 33-6 (1947).

Refining Fats and Waxes

Crude tall oil, cottonseed, dark mineral oil, dark tallow, and commercial oleic acid, are refined by processes which involve treatment with a spent hydrogenation catalyst under hydrogen pressure at about 212° F. Crude tall oil was mixed with 5 per cent of activated earth, 1 per cent of "Filter-Cel," 2 of spent nicker-copper catalyst, and 1 of activated carbon. Hydrogen was introduced at 200° F. at 250 pounds per square inch. The mixture was further heated and agitated for 2 hours at 225° F., cooled, and filtered. The clear filtered oil was heated and stirred with 0.1 per cent of monosodium phosphate and 0.3 per cent of phosphoric acid in aqueous solution at 200° F. for a half hour. Greenish nickel and copper soaps were precipitated and traces of iron were removed by treatment with acetic acid, citric, or oxalic acid. The oil can then be hydrogenated and if necessary further purified. I. Taussky. U. S. Patent No. 2,413,009.

Effect of Monoglycerides

Monoglycerides dissolved in oils exert strong surface-active properties. When both monoglycerides and diglycerides are present in the phase, the surface activity of diglycerides is less than 1/100th that of the monoglycerides on a weight for weight basis. Hence the interfacial tension is substantially a function of the monoglyceride content. The interfacial tensions against water of such oils as peanut, cottonseed, and soybean are practically the same, and their interfacial tensions are lowered by practically equal amounts for equal additions of a given monoglyceride preparation.

A concentration of 1 per cent of monoglycerides in the oil phase will lower the interfacial tension at the oil-water interface to approximately one-half that which is observed when no monoglycerides are present. A concentration of 6 per cent of monoglycerides in the oil phase will lower the interfacial tension approximately to zero. R. O. Feuge, *J. Am. Oil Chemists' Soc. 24*, 49-52 (1947).

Critical Concentration

The critical concentration of dodecane sulfonic acid above which micell formation begins was found to be 0.0095 molar at 4° C., and 0.0075 molar at 25° C., by use of an indicator method. H. F. Walton, *J. Am. Chem. Soc. 69*, 469 (1947).

Cationic Emulsifiers

Fats, oils, cholesterol etc. are readily emulsified in an acid medium by "Zephirol" and related cation-active agents. J. Polonovski. *Compt. rend. soc. viol. 140*, 19-21; through *Chem. Abs.*

Wool Scouring Study

A comparative study was made of soap, and anionic, cationic, and nonionic synthetic detergents for efficiency in scouring wool lubricated with 50 per cent of mineral oil and 50 per cent of grease oil. Lampblack was added to the oil mixture so that reflectance values could be obtained before and after scouring. The soap was a red-oil soap; the anionic agent was the sodium salt of an alkyl aryl sulfonate; the cationic was a polyethylene ether of a fatty amine; and the nonionic was a polymerized alcohol with ether linkages. The detergents were used alone and combined with salt builders as follows: sodium sulfate, sodium carbonate, sodium bicarbonate, and also sulfuric acid. The washing was carried out in a miniature wool dolly washer made to scale from the usual mill washer.

The synthetic detergents showed excellent results for removal of the oil but were not as good as soap for lampblack removal. All of the salts promoted detergency but sodium carbonate gave the best results as builder.

Used alone, soap gave the best cleaning, then the cationic, anionic, and nonionic detergents at a concentration of 11 per cent. In acid solution the nonionic was the most efficient. With 11 per cent of detergent and 2.2 per cent of sodium carbonate, soap was highest in washing efficiency, then the anionic, nonionic, and cationic. When 11 per cent of detergent was used with 22 per cent of sodium carbonate, the nonionic was nearly as good as soap, and the other two synthetics, although not quite as efficient, gave good results. The general conclusion was that 10 per cent of each detergent with 6 per cent of sodium carbonate to give an initial pH of about 11, gave good overall results in oil- and lampblack removal. R. E. Derby, *Am. Dyestuff Reporter 36*, P91-6 (1947).

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Method for Pressing Soap

In a process for die-pressing soaps and other detergents, an improvement comprises introducing an inert powder material having a hardness below 6 on Moh's scale, between a detergent blank and the face of a die prior to applying the die face to the blank. The major portion of the powdered material should be finer than 200 mesh. The powder provides a substantially uniform film between the detergent blank and the faces of the dies. D. F. Fischer, to Colgate-Palmolive-Peet Co. Canadian Patent No. 439,866.

Glass Cleaners

Isopropanol is used in many of the liquid glass cleaners, since it is less volatile than the lower alcohols and is relatively non-toxic. Its chief disadvantage is its unpleasant odor. To overcome this, small amounts of perfume may be used of the "water-soluble" type. This may cause some clouding, a not too desirable result.

The alcohol solutions often contain small amounts of alkali, soap, ammonia, or synthetic detergent. Incorporation of 0.05-0.1 per cent of synthetic detergent tends to facilitate polishing the surface, serving as a lubricant. It also cuts grease and helps disperse perfume ingredients. In such small amounts, it leaves no film. The alkyl aryl sulfonates serve well for the purpose; other types such as amides and sulfates have also been used. A very small amount of alkaline salt is incorporated in some products, to give a pH of about 10. This also should aid the cleaning process. Dorothy A. Neidig. *Chem. Industries 60,* 53-5 (1947).

Glycerine Distillation

A new distillation unit for glycerine, having high capacity and high steam efficiency is described. C.P. glycerine of high purity is obtained in one distillation. The features of the still include generation of open steam for distillation within the still system by recovery of latent heat from glycerine vapors. The method is continuous, and entirely eliminates sweetwater. W. A. Peterson. *J. Am. Oil Chem. Soc. 24,* 79-84 (1947).

Sulfonated Oil Shampoos

Originally the name Turkey Red Oil was used to designate sulfonated castor oil. Today it is used rather loosely and may mean any sulfonated vegetable oil. Such oils are used to some extent in the manufacture of so-called nonlathering soapless shampoos. These contain sulfonated oil, white oil, and water with sufficient perfume to give a pleasant odor. Sulfonated teaseed oil, or a synthetic oil having approximately the same characteristics, is the most desirable oil to use. Sulfonated castor oil has been largely abandoned in favor of others possessing less stickiness. While this type of shampoo does not form a lather, it does have sufficient cleansing properties to give a clean head of hair after shampooing. P. Soderdahl. *J. Am. Oil Chemists' Soc. 24,* 69-71 (1947).

Insect Repellents

Several compounds in the class of diols boiling at 95-150° C. at 5 mm. pressure are good insect repellents. These compounds contain more than 2 carbon atoms per oxygen atom and 7-16 carbon atoms per molecule. The preferred compound is 2-ethyl-1, 3-hexanediol (Rutgers 612). This is 5 times as effective against captive mosquitoes as oil of citronella. Another effective compound is 2-butyl-2-ethyl-1,3-propanediol. The compounds afford relatively lasting protection against several types of mosquitoes, black flies, sand flies, stable flies, deer flies, cat, dog, and sticktight fleas, and chiggers. B. G. Wilkes, to Carbide and Carbon Chemicals Corp. U. S. Patent No. 2,407,205.

Synthetic for Shampoo Use

Petroleum sulfonates are prepared which make good shampoo bases. A water-soluble alkali metal sulfonate is made by extracting a naphthenic petroleum distillate of a Saybolt viscosity of 75-85 seconds at 100° F. with a selective solvent and sulfonating the extract. Sulfonation is carried out at atmospheric temperature with 300-400 volumes of 98 per cent sulfuric acid per volume of extract. The temperature rises during the operation to 120-170° F. Approximately 50 per cent of the extract is sulfonated under these conditions. The sulfonic acids are recovered by extracting the acid-treated oil with 3-5 per cent of water after the sludge formed during the acid treatment has been removed.

The aqueous extract is neutralized with an alkali metal hydroxide and purified by mixing with an equal volume of 50 per cent isopropyl alcohol. The alcohol solution is extracted with an equal volume of light naphtha. The sulfonate solution is freed from alcohol by distillation, and the alcohol-free solution is settled for 24 hours to allow separation of water-insoluble sulfonates. An aqueous solution containing 15 per cent of water-soluble alkali metal sulfonate is suitable as a shampoo. J. C. Showalter, to Standard Oil Development Co. U. S. Patent No. 2,412,916.

Soap-Synthetic Mixture

A detergent composition contains a major proportion of soap, together with a quantity of mild neutralizing agent sufficient to reduce the alkalinity of the soap to pH 7.2-8.0. Also present is 3-30 per cent, based on the weight of the soap, of a surface-active agent having a single aliphatic radical of at least 8 carbon atoms. The surface-active agent is of the type of sulfonated fatty-acid amide. E. A. Vitalis, to Am. Cyanamid Co. Canadian Patent No. 440,225.

Composition Prolongs Para

A loose mixture of *para*-dichlorobenzene and an inorganic product containing chemically bound sulfur such as sodium sulfate, sodium thiosulfate, or plaster of Paris, is produced for mothkilling and/or air-purifying purposes. The existence of the *para*-dichlorobenzene in solid form is thus prolonged. H. Schmolka. British Patent No. 567,002.

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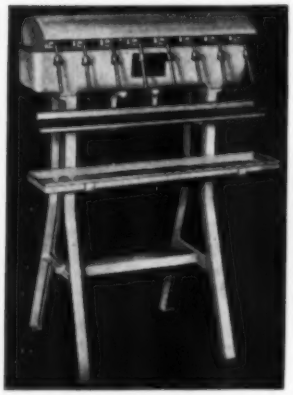

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No. 2,416,745, **Fermentative Glycerol Production**, patented March 4, 1947 by Ellis I. Fulmer and Leland A. Underkofler, Ames, Iowa, and Richard J. Hickey, Terre Haute, Ind., assignors to Iowa State College Research Foundation, Ames, Iowa. In a process for the production of glycerol, the steps of fermenting a fermentable sugar with yeast in a slightly acid medium having a pH between 6.5 and 6.9 and containing a substance selected from the group consisting of ammonium sulfite and ammonium bisulfite, said substance being present in a quantity in excess of that sufficient to fix the acetaldehyde formed in the fermentation, precipitating the sulfite ion by adding to the medium a substance from the group consisting of hydroxides, oxides and carbonates of metals of the alkaline earth group, subjecting the fermented mixture to distillation to remove therefrom ammonia, acetaldehyde and ethanol, separating the precipitate from the medium, and adding carbon dioxide to the medium to precipitate as calcium carbonate any soluble calcium remaining in the medium.

No. 2,417,151, **Composition of Matter with a Scent of Ambrettolide and Process of Making Same**, patented March 11, 1947 by Charles Collaud, Geneva, Switzerland, assignor to Givaudan-Delwanna, Inc., New York, N. Y. A new composition of matter having an ambrettolide-like odor, comprising a mixture of unsaturated large-ringed lactones isomeric with ambrettolide, said mixture being a colorless liquid which distills entirely between 118° and 120° C. under a pressure of 0.25 mm. of Hg. and which has a density of 0.960 at 20° C., a refractive index $N_D^{20} = 1.480$, and a saponification number equal to 220.4.

No. 2,417,329, **Method of Refining Crude Wool Grease**, patented March 11, 1947 by Eugene Snyder, Philadelphia, Pa., assignor to American Chemical Paint Company, Ambler, Pa. In the refining of crude wool grease the process which includes emulsifying the grease by agitating and heating it with water and soap to a temperature above its melting point, adding to the emulsion a relatively small amount of water-soluble, substantially neutral, sulphonated fixed oil, allowing the mass to subside to form a water layer and a supernatant grease layer, and then separating the grease layer from the water layer.

No. 2,417,882, **Composition for Removing Unwanted Hair**, patented March 25, 1947 by Leonard J. Neary, Los Angeles, Calif. A hair-removing composition containing as essential ingredients glucose, and a water-insoluble powder, in the proportions of approximately 2 to 1 respectively and being at temperatures not over body temperature a spreadable, sticky, semi-liquid product.

No. 2,418,071, **Process of Treating Animal Fibers and Products Thereof**, patented March 25, 1947 by Milton Harris, Bethesda, Md., and Wilbur L. Patterson, Chagrin Falls, Ohio, assignors to Textile Foundation, Washington, D. C. The process of treating wool to render it resistant to moths and felting which comprises subjecting the wool to the action of a reducing agent selected from the group consisting of lower alkyl mercaptans, thioglycolic acid and betamercaptoethanol while maintaining the pH of the reaction below about pH 9 until at least about one-third of the disulfide linkages of the wool have been converted to sulfhydryl groups, then treating the wool at a pH between about pH 7 and pH 9 with a compound selected from the group consisting of substituted and unsubstituted alkyl monohalides to convert the sulfhydryl group into thio-ethers.

BRITISH SOAP INDUSTRY

(*From Page* 34)

of anti-oxidants, particularly those furnished under trade names by some of the larger chemical companies and designed solely as soap preservatives. This is not a common practice in England, he says.

England, says Dr. Mittler, is making progress in the field of synthetic detergents and although there is a hard water problem in England, as there is in the States, it is necessary for the British soaper at present to use synthetic detergents primarily to extend the presently inadequate soap supply. It is believed by some in England, according to Dr. Mittler, that the people of the United States are being well supplied with large quantities of these synthetics, but he found that although production is up to what he had expected, the demand is exceedingly great and the supply available for sale was lower than he had expected. He says that the amount of alkyl aryl sulfonate types of detergents is quite low in England because of the shortage of fatty oil raw materials that has existed for many years.

He sees a future for synthetic detergents in England and expects that the field will be shared by both the soap and the petroleum oil industries in much the same manner as is expected in the United States. "Teepol," a Shell Oil Co. product sold through Technical Products Co., is the main synthetic detergent at present on the British market.

Dr. Mittler is particularly interested in continuous process soapmaking and stated that in England progress is also being made along these lines but that by and large, the practice is still confined to a few of the larger soapers who are working along the lines of the continuous hydrolizing of fats to produce fatty acids and glycerine. He stresses that his acquaintance with soap-making in England is by no means industry-wide and that his observations are but his own.

SOAP PLANT OBSERVER

(*From Page* 45)

evenly fed to the plodder, and when there is bridging of the milled flakes in the plodder feed hopper. If you allow the plodder to stand idle for a time and forget to turn off the water in the cooling jacket, too low a temperature results and a hard core of cold soap with a warmed skin is found on the extruded bar. This causes strains

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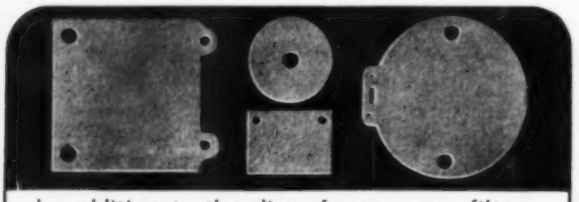

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and cracking. Finally, cracking can be due to chilling of the ribbons on the conveyor during passage to the finishing plodder or even to the preliminary plodder. If the plodder is run at excessive speeds, the outside of the plodder bar may emerge more slowly than the inner core. This sets up strains that may eventually result in laminar cracks.

Finally cracks can occur as a result of mistakes in pressing. It is well to avoid methods that call for excessive displacement of the soap by the press. Some of the more complicated designs are pressed from the blank slug in a two-step process. Blank slugs should be pressed while warm and there should be no lag from the time they are extruded, and cut to the time they reach the press. However, if you are using a foot press, some soapers recommend that a short period of time be allowed for the soap to form a light skin. One soap maker cautions against pressing against the grain of the plodder bar. He claims that this causes unnecessary strain.

All in all, cracking of milled toilet soap and proper milling procedure appear to be individual problems. A number of other reasons for cracking may occur to readers. Your observer would appreciate having further comments on the subject so the information may be circulated about the industry. Perhaps the greatest danger will be found to lie not so much in faulty milling room procedure but rather in the time spent trying to locate the fault in the milling room. The trouble probably lies elsewhere.

—— ♦ ——

Olive Oil Rancidity

The Wheeler test for peroxides proved to be relatively the most reliable method for the examination of olive oils, in terms of correlation with organoleptic rancidity. The Issoglio test, although of no value for estimating rancidity, can be of use in differentiating the natural olive oils from refined olive oils. The Kreis test was found to give positive results for oils of excellent organoleptic quality and low acid values, as well as for oils which were definitely rancid. There is a wide variation in the susceptibility to oxidation of oils from different sources. Infestation of the olives by molds induces the susceptibility of the oils to rancidity.

Alcoholic extracts of anise seed showed antioxidant properties. Negative results were obtained using alcoholic extracts of mustard seed. S. A. Kaloyereas, *J. Am. Oil Chemists' Soc. 24*, 39-41 (1947).

—— ♦ ——

Nonionic Agent Micelles

Measurements of freezing-point lowering of aqueous solutions of 3 nonionic detergents of the polyethylene oxide-hydrocarbon type show that these compounds form colloidal micelles similar to those formed by colloidal electrolytes, except for the absence of ionization. Addition of potassium chloride to a solution of nonaethylene glycol monolaurate caused no significant change in the degree of association of the detergent. E. Gonick and J. W. McBain, *J. Am. Chem. Soc. 69*, 334-6 (1947).

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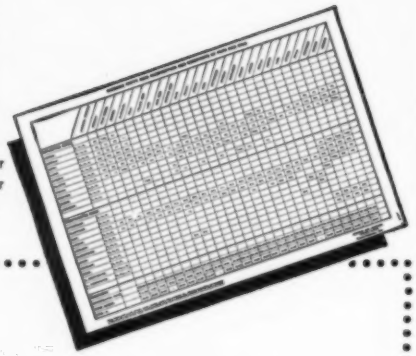

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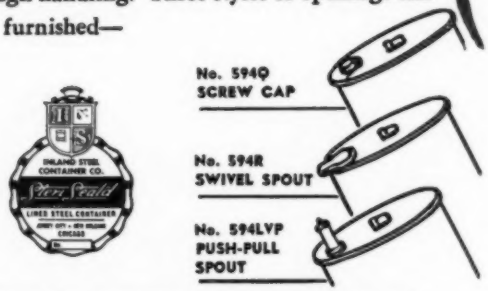

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New Zeolite Bulletin

A revised edition of Cochrane Publication 4021 describing carbonaceous zeolite water conditioning equipment for softening boiler feed and industrial process waters has just been issued by Cochrane Corp., Philadelphia. Seven typical installations are illustrated and a number of application flow diagrams are included. Curves, tables, and the various chemical reactions involved complete the technical data.

Ordinary zeolites are regenerated by sodium chloride (common salt) and when water containing calcium and magnesium "hardness" is subsequently softened, these substances are replaced by soluble sodium. Carbonaceous zeolites are not injured, as are ordinary zeolites, by water of low pH (high acidity) value. Carbonaceous zeolites can be regenerated with dilute acid so that in softening water hydrogen rather than sodium is exchanged for calcium and magnesium as well as sodium bringing about an impressive reduction in total dissolved solids. In the case of carbonates the resulting carbonic acid can be eliminated as carbon dioxide by aeration. Sodium carbonate can thus be removed from water without introducing some other by-product salt. By blending the effluent from both hydrogen-regenerated and sodium-regenerated zeolite softeners, alkalinity can be rigidly controlled.

New Pennsalt Cleaner

A new general purpose inorganic cleaner designed for maintenance work and suitable for numerous other uses has been announced by the Pennsylvania Salt Mfg. Co., Philadelphia. The new cleaner, designated "Pennsalt MC-1," is a dry granular inorganic material that dissolves quickly in water. The product is claimed to be useful for cleaning walls, floors, woodwork, or windows; for general purpose janitor cleaning, for industrial washing machines, for industrial cafeteria dishwashers, and other general cleaning in factories, hotels, office buildings and institutions. Pennsalt MC-1 can also be used for cleaning metals where a heavy duty cleaner would be too strong. The new cleaner is said to be mild and not harmful, either to clothing or skin. It acts as a water conditioner and soap saver. Packed in 125 or 250 lb. plywood drums, Pennsalt MC-1 is being sold by Pennsalt's special chemical sales division.

Water Softening Briquettes

Briquettes for water softening are made by cooling and allowing to set in molds, a hot slurry containing a member of the group comprising sodium aluminate and a mixture of sodium aluminate and soda ash. The amount of sodium aluminate in the slurry is not less than 2 per cent by weight. Trisodium phosphate is also present, and water in an amount insufficient to hydrate the trisodium phosphate completely. J. M. Smith, to Canadian Ins. Ltd. Canadian Patent No. 439,641.

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ALGINATES

(*From Page* 35)

nite advantages, as "scaffolding" threads, over the formerly used products.

Further work with the alginates plainly established their limitations which, in some cases, excluded them from commercial exploitation. Calcium alginate is the most widely used type because of its denier strength and its resistance to rapid degradation in storage. It can readily be seen that the limitation of these adjuvants presents a picture of further research for the ideal substitute. The alginates in the textile industry represent a virgin field with great possibilities for the future.

We have mentioned a few industrial applications of the alginates in cosmetic and textile fields. The potential use of alginates in other fields depends on industrial research and the ability to adapt these findings accordingly. Since war and labor instability have caused shortages in many important raw materials, now is the time to develop the proper substitutes by exploiting our vast supply of overlooked natural resources.

FATTY ACID TRENDS

(*From Page* 43)

panies. In this method, mixtures of fatty acids are dissolved in a suitable solvent and then chilled under controlled conditions. As cooling progresses, the saturated stearic acid drops out of solution in the form of pure white crystals and is removed by filtration. On further cooling, the oleic acid is removed, leaving the solvent progressively richer in the drying oil fractions, linoleic and linolenic acids."

A process based on this principle of controlled crystyllization has been developed by Emery Industries, Inc., of Cincinnati, Ohio and has been designated as the Emersol Process. This company gives a more detailed explanation of the process. The solid fatty acids are separated from the polar solvent medium, permitting a sharp separation in a single stage. The solvent is separated from the stearic and oleic acids by distillation and is returned for reuse. According to the company's description, the distilled fatty acid mixture is dissolved in methyl alcohol of proper concentration, along with small amounts of a crystal promoter. This solution is chilled in a multi-tubular agitated crystallizer, resulting in a slurry containing stearic acid crystals in suspension. This mixture is separated on a continuous rotary filter with cold alcohol to remove adhering liquid acids. The filter cake consisting of about 50 per cent stearic acid and 50 per cent solvent, is melted and transferred to a still where the alcohol is removed and returned to the start of the process. The stearic acid is discharged as a final product ready for finishing and packaging. The filtered oleic acid solution is pumped through an economizer and then to a still where the solvent is recovered. Oleic acid is discharged as commercial grades suitable for industrial application. If it is desired to produce an extra high quality product, the acid may be further treated by distillation, washing and bleaching.

"The second general method," says Dr. Manley in his article, "known as liquid-liquid fractionation, was pioneered by S. E. Freeman, Pittsburgh Plate Glass Co., by Warren Goss, Northern Regional Research Laboratory, USDA, by A. W. Hixon, Iowa State College, and by others. In one variant of this procedure, mixed fatty acids are pumped upward through a tower against a downward flow of a selective solvent. Since the solubility of stearic acid, oleic, linoleic and linolenic acids in the solvent increases in that order, liquid drawn from the top of the tower will be richer in stearic acid and a solution flowing from the bottom of the column richer in linoleic and linolenic acids."

Another process based on the principle of liquid-liquid extraction using a light hydrocarbon under pressure is the "Solexol" process developed by Dr. H. J. Passino and others at the M. W. Kellogg Co., New York process engineers (*Soap & Sani. Chems.*, XXII, 12, 1946, P. 75). Although this process is being used to separate glycerides of varying chain lengths, and unsaturated glycerides from the saturated ones, it may also be used to separate the various fatty acids along the same lines of segregation.

All of these new developments and processes point out the increasing emphasis placed by the industry on fatty acid technology. The fatty acid segment of the fats and oils industry is relatively new but is expanding as the buying of fatty acids on a specifications basis becomes more prevalent. Entry into this field will further strengthen the hand of those who supply raw materials to the chemical specialties trade and enhance the value of American oil seed crops, chiefly soybean, cottonseed, corn and flax.

New Atlas Assignments

H. B. Paul, Atlas Powder Co., Wilmington, has been assigned as technical representative of the industrial chemicals department for the New England district. He will be attached to the New York office. L. G. Parkinson has been assigned to the mid-west, and is attached to the Chicago office as technical representative of the industrial chemicals department.

INTERCHANGEABLE SPRAYER — **A new type hydraulic sprayer designed for interchangeable attachment to any standard one pint bottle or can has been developed by Z and W Machine Products, Inc., Cleveland. The model shown is made of precision parts, aluminum and brass, and may be completely dismantled for cleaning. The sprayer has a five inch vertical stroke producing 100 to 300 pounds nozzle pressure and has a 0.010 inch orifice. The sprayer is said to be rust proof and is equipped with fine mesh screen to prevent clogging. Ball check valves assure positive action.**

SANITARY PRODUCTS

A SECTION OF SOAP

THAT DDT has been a boon to the insecticide user in both household and agriculture, there is not the slightest doubt. It has been the single greatest chemical insecticide development in history. But we are now beginning to wonder if it is anything like a boon to the insecticide industry. Does it not do too complete a job in insect control for the good of the industry? We know that household insect spray sales last year were below normal. We know that the public generally for some time has refused to accept sprays which fail to contain DDT. Is there a possibility that the prolonged effectiveness of these products was directly reflected in reduced sales in 1946 and may have the same effect in 1947? We are not alone in musing this question.

Where homes, cellars, attics, barns, and other places were formerly sprayed at frequent intervals, the number of sprayings per season has been reduced to a small fraction of previous use due to the residual effects of DDT. Carried on for a few years, this trend could conceivably cut the use of insect sprays to a point where a sizable proportion of the industry might have to go out of business. The results obtained, for example, in bedbug work by professional pest control operators using DDT is an interesting case in point. They actually tend to put themselves out of business by the recent effectiveness of their control operations.

Although all these facts are quite generally known throughout the insecticide industry, we feel that the subject is one which could very well be taken apart and examined more closely. In short, is the current insecticide market situation merely a temporary matter reflecting a slow season in 1946, or is it the beginning of a trend which might have permanent effects on insecticide sales?

Perhaps, it will take another five years to find the real answer to this question, but in the meantime, a closer study by trade groups might unearth some information of value.

NO INSECTICIDE manufacturer needs to be reminded that the supply of insect sprays throughout all channels of the trade is heavy. All are well aware of this fact and are naturally hoping that the current season will see a wide expansion in consumption in contrast to the disappointing 1946 season. Insecticide people make no bones of the fact that their prayers are for a warm, wet early summer and plenty of bugs this year to help move stocks off dealers' shelves. The same feeling applies to sprays in the stock rooms of industrial and institutional users.

For bulk sprays particularly, some rather unusually low prices have been heard. There may be justification for some of these low prices to stimulate the movement of accumulated stocks. However, we wonder if any more spray will be sold at low prices than at high. After all is it not more a case of stimulating consumption rather than further sales to jobbers, dealers and repackers? Forcing sprays into trade channels will not ease the log-jam at the consuming end.

Closely connected with increased use of insect sprays is the advertising directed to both household and to institutional and industrial users. Our observations indicate that this has shown a considerable decline this year. With the need this year for expanded consumer advertising, if anything, we find the reverse to be true. Shortsighted? We are inclined to answer this in the affirmative. Although we do not know all the problems of individual manufacturers, we still feel that right now is the time for a concentrated advertising drive on insecticide consumers. With the industry up to its neck in insect spray, this is certainly no time to quit advertising.

At left is shown a chemist at White Marsh Research Laboratories of Pennsylvania Salt Manufacturing Co., Philadelphia, inserting a porous bag containing DDT and clay into one of the cylindrical tubes in the charging and purifying tower of the "Arresto-Moth" machine. Solvent pumped through this tower dissolves out the DDT and carries it to the extractor where it is forced by centrifuging through the clothes to be treated. The tank on the machine holds 30 gallons of solution.

Mothproofing with DDT

THE recent development of an efficient and economical method for the mothproofing of clothing by the use of DDT, offers the commercial drycleaner the opportunity to make available to his clientele another lucrative service. The new process, developed in the Whitemarsh Research Laboratories of Pennsylvania Salt Manufacturing Co., is called the "Arresto-Moth" process. It was formerly called the "Erusto-Moth" process.

In developing a suitable process for applying DDT to clothes during the dry cleaning cycle, the following essential criteria had to be kept in mind: (1) The mothproofing should be long lasting, i.e., it should last one to two years or at least between drycleanings. (2) The process should be economically attractive to the customer. (3) The mothproofed fabrics should not be injured in any way by the treatment, the appearance and "feel" of the treated fabrics should not be deleteriously affected, the process should not leave any odor in the treated articles, and the treatment should not produce any undesirable symptoms in the user of the fabrics. (4) The method should not interfere with the normal operation of the drycleaning plant by contaminating the entire system, and it should be applicable, if desired, to selected loads only. (5) To be successful, the process should not be unpleasant or unsafe for the drycleaning operator to use. (6) The operation should be simple and foolproof.

Our solution of the problem was the "Arresto-Moth"* process, employing DDT as the mothproofing agent. With a special mobile unit,† a solution of DDT is sprayed into the load in the centrifuge until the desired amount of DDT has been added to the cloth. Contamination of the regular drycleaning solvent is prevented, and the load is dried in the usual way. The process is described in detail below.

The Process

Carried out during the regular drycleaning cycle, this new process begins after the garments are drycleaned, transferred to the extractor and centrifuged in the usual manner. The machine (Fig. 1) is a small unit consisting of a pressure charging and purifying tower with cylinders for four cloth bags of the DDT mixture, two pumps, two flexible hoses, one to carry the solution to the extractor and the other to return it to the machine, a small electric motor to operate the pumps, and a 30-gallon storage tank. The assembly is mounted on casters, and can be wheeled up to or away from the centrifuge as required. The mothproofing equipment is attached to the extractor at two points (X and Y) by the flexible hose lines. One of these lines terminates in a spray head mounted in the cover of the centrifuge, and the other hose is connected to one of the extractor drain outlets.

To prepare the machine for operation, pure solvent is charged into the storage tank through suction line Y until the gauge indicates "full." The four cotton bags, each containing four pounds of a mixture of adsorbent powder and DDT, are placed in the charging and purifying tower, which is then closed. Valve A is shut and valve B is opened, and pumps P1 and P2 are started after valve C has been set to permit bypassing of the spray head. When the specific gravity of the solution in the storage tank indicates the proper DDT concentration, the machine is ready to begin operation. Because of variations in efficiency of different extractors, this concentration must be determined for each one.

Before the machine is put into operation, the excess solvent in the load in the extractor is permitted to return to the regular drycleaning system in the usual manner. At the end of this extraction, valve D to the

* Whitemarsh Research Laboratories, The Pennsylvania Salt Manufacturing Co., Philadelphia, Penna.

* Trademark registered in U. S. Patent Office by Pennsylvania Salt Mfg. Co.

† This equipment is manufactured and sold by the U. S. Hoffman Machinery Co., New York, N. Y.

drycleaning system is closed. Without stopping the extractor, valves A and C are opened and the DDT solution is sprayed at the approximate rate of 15 gallons per minute for 2 or 3 minutes through the garments in the centrifuge, thoroughly saturating every piece in the load. The centrifuge solution is continually returned to the machine. After spraying is completed, valve C is closed and centrifuging is continued for an additional 2 to 3 minutes to remove the excess DDT solution from the clothes, which also

DT During Drycleaning

By Adrian C. Smith

returns to the machine. As the solution returns to the unit during this operation, it is pumped through the adsorbent material in the purifying tower. This procedure filters and purifies the used DDT solution, keeps the treating solution free of coloring matter, fatty acids, fatty acid decomposition products, odor, lint, etc. However, the solution can be diverted directly to the storage tank if desired by means of valve B.

The concentration of the solution can be checked, either during treatment or afterwards, by reading the hydrometer on the machine. If the specific gravity drops below the desired point, the DDT concentration must be built up again by replacing one of the depleted bags with a new one. This is accomplished between treatments.

Theoretically, the solvent level in the treating system should not drop, since there is only replacement of the solvent in the clothes by the DDT solution. Actually, a small loss does occur due to some evaporation and loss in the DDT-depleted bags containing the adsorbent. Thus the system utilizes nearly every drop of DDT solution.

Optimum mothproofing protection obviously depends on the amount of DDT left in the fabric at the end of the drycleaning cycle. Our experiments on a commercial scale showed that a minimum of 0.25 per cent DDT, based on the dry weight of the fabric, assured complete mothproofing under all conditions to which treated clothing might conceivably be exposed. Larger amounts of DDT are not only unnecessary, but beginning at about 0.75 per cent DDT the deposit may start to become visible on dark garments.

After treatment, the work is dried in the usual way. Some DDT is lost by vaporization during the drying. The magnitude of these losses at several drying temperatures is shown in Table I. The stability of DDT during the drying operation is evidenced by the fact that no decomposition products of the chemical, e. g., hydrochloric acid, were detected at the exhaust end of the dryer.

The Results

In developing this process, more than 20,000 pounds of various types of clothing were treated with DDT solution. The fabrics included cotton, wool, silk, acetate rayon, cellulose rayon, casein fibers and Nylon. This work permitted us to study the effect of DDT on the fabric and on the equipment, and the efficiency of the chemical as a mothproofing agent. Our findings are summarized below.

Effect of DDT on Fabrics

Tensile Strength: Tensile strength measurements were made with the Scott apparatus using the ravelled strip method. Numerous determinations showed that there was no decrease in the strength of cotton, wool, silk, casein fabric, acetate rayon, cellulose rayon, and Nylon after impregnation with up to 2.4 per cent of DDT, based on the weight of the fabric.

Resistance of Dyes to DDT: Red, yellow, blue, brown and black samples of the different fabrics were impreg-

TABLE I
Loss of DDT by Vaporization from Fabrics During Drying

Wool Sample No.	*Treatment*	*Calc. % DDT in Wool at start of drying*	*% DDT in Wool by Analysis*	*% DDT Lost*
1	DDT-Air Dried	.449	.485	—
2	DDT-Air Dried	.423	.485	—
3	DDT-Air Dried	.430	.469	—
4	DDT-Air Dried	.415	.457	—
1	One hr. in dryer 50 lb. Load (81° C.)	—	.241	50.3
2	One hr. in dryer 50 lb. Load (81° C.)	—	.100	79.4
3	One hr. in dryer No Load (83° C.)	—	.164	66.2
4	One hr. in dryer No Load (83° C.)	—	.157	65.6
1	½ hr. in dryer 50 lb. Load (73° C.)	—	.350	27.8
2	½ hr. in dryer 50 lb. Load (73° C.)	—	.339	30.0
1	½ hr. in dryer No Load (81° C.)	—	.216	55.4
2	½ hr. in dryer No Load (81° C.)	—	.212	56.3
1	Cool Air Dried 3 hrs. 50 lb. Load	—	.499	1.0 (Gain)
2	Cool Air Dried 3 hrs. 50 lb. Load	—	.416	14.0

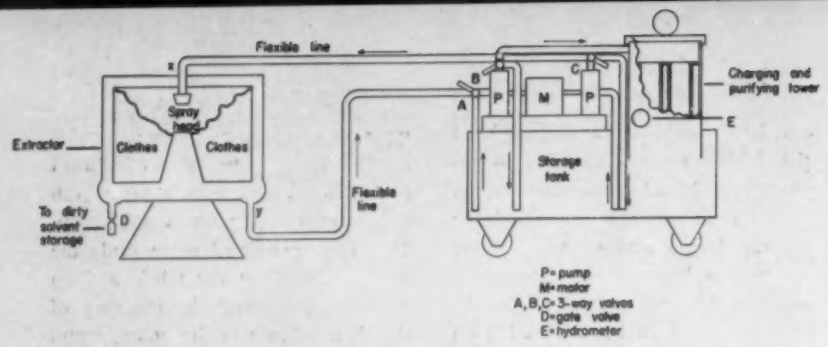

FIGURE 1:

The DDT charging and purifying machine (right) pumps ordinary cleaning solvent through bags of DDT and activated clay in the charging tower (top) and then into a special spray head in the lid of a conventional drycleaning centrifugal extractor, (left). Solvent with DDT which has passed through the load, depositing DDT on the garments, returns from the extractor outlet to a tank below the charging tower in the DDT charging machine.

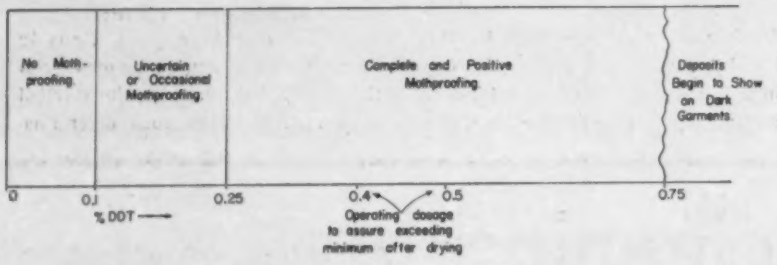

FIGURE 2:

When quantities of DDT in excess of 0.25 per cent were on the cloth, complete mothproofing resulted. To avoid slipping below this level and take care of dryer losses, variations in extractor efficiency from load to load and other factors, between 0.4 per cent and 0.5 per cent DDT is always applied to the extractor. The proper solution of DDT is indicated by specific gravity, shown on a hydrometer at the side of the charging tower.

nated with various amounts of DDT by immersion and dried. It was observed that the colors were not altered in any way and that they did not bleed when the samples were subsequently wetted with drycleaning solvents and with water. On exposure to light in the Fade-O-Meter, the DDT-treated samples showed no more tendency to fade than did the untreated specimens of the same materials. Similar results were invariably obtained with clothing similarly treated.

Odor: No odor due to DDT was detected in any of the clothing treated by this technic, either in the laboratory after treatment or by wearers during normal use.

"Feel" or "Hand": All of the fabrics treated were examined by operators experienced in the "feel" of textile materials. No effect on the "hand" of the treated fabrics was noted in any case, even with materials containing up to 0.8 per cent of DDT. Neither was any effect noted by wearers of treated articles in direct contact with the body.

Retention of DDT by Textiles: DDT is not adsorbed from solution by textiles, but the DDT remaining after drying is completely retained mechanically in the fibers. This was shown to be true by long-time cold tumbling and vigorous rubbing.

Resistance of DDT to Drycleaning and Wetcleaning: DDT is soluble in commercially used drycleaning solvents, e.g., carbon tetrachloride, trichloroethylene, perchloroethylene and Stoddard solvent; consequently, such solvents would remove the DDT from fabrics which have been impregnated with the chemical. Fabrics impregnated with DDT may be wetcleaned or steam spotted several times without appreciable decrease in the mothproofing characteristics, but repeated wetcleaning removes the DDT and makes remothproofing necessary.

Effect of DDT on Equipment

Continuous operation of the process over a three-year period has shown that there is no corrosion, buildup, or other deleterious effects due to the DDT, in the parts of the drycleaning system with which the DDT solution comes into contact (centrifuge, dryer, solvent recovery equipment, finishing equipment, etc.) or in the mothproofing machine itself. This was further confirmed by numerous tests on samples of various metals of construction and the continuous operation of a vacuum still. The distillation tests further demonstrated that solvent recovered from DDT solutions met all specifications for Stoddard Solvent. (1)

Efficiency of DDT

In determining the efficiency of DDT for mothproofing, numerous tests were conducted using the standard mothproofing tests. (2) Various grades of DDT, solvents, and types of cloth were used. The results are summarized in Fig. 2, which shows schematically that no mothproofing was obtained when quantities of less than 0.1 per cent DDT are applied. The exact concentration of DDT necessary to produce mothproofness varied between 0.1 per cent and 0.25 per cent due to such variables as condition of cloth (presence of textile finishing oils), type of weave, variety of fabric, etc. When quantities in excess of 0.25 per cent were on the cloth, complete mothproofing resulted. To avoid inadvertently slipping below this level, to take care of dryer losses, variations in extractor efficiency from load to load and other factors, we found it advisable to operate in such a way that between 0.4 per cent and 0.5 per cent DDT is always applied in the extractor. Under these conditions, satisfactory results were always obtained. (Fig. 2) Furthermore, tests on samples treated in this manner remain mothproofed for over two years. Thus, one four-pound bag will treat approximately 400 pounds of clothing.

To test impartially the conclusions reached in our work, a fellowship was established at the National Institute of Cleaning and Dyeing, and the personnel of that organization made an independent evaluation of our method using 5,500 pounds of clothing. The Institute's Research Fellowship Bulletin No. F-5 published December 1, 1946, completely confirms our own findings.

Discussion

Extended experience indicates numerous advantages for this method of applying DDT to fabrics during the drycleaning process. Impregnation of textile articles with DDT solution could be effected by simple immersion or by ordinary spraying. By the former technic, DDT would have to be introduced into the washer and subsequently carried through the whole processing and solvent reclaiming systems. In this case, all the DDT would be lost in reclaiming the solvent by distillation, or auxiliary equipment for the purpose would be required. In either case, it would be necessary to handle dripping clothes in order to advance them to the extractor stage. Elaborate precautions would be required to protect the operator from an excessive contact with the DDT solution.** If the regular washer were used, it would not be possible to handle loads which were not to be mothproofed, until the DDT solution was withdrawn from the system.

Another disadvantage of adding the DDT to the washer resides in the difficulty of adjusting the concentration of the chemical to the degree required for leaving the proper amount of DDT in the treated fabric. If a relatively low concentration were used it would be necessary to reduce the extractor efficiency in order to leave more solution in the clothes going to the dryer. As a consequence, the load on the dryer would be heavier with an attendant waste of solvent and increase in drying time. If a relatively high concentration of DDT were introduced into the drycleaning solvent in the washer, the action of the soap and other cleaning aids would be adversely affected.

Similar objections may be raised to the ordinary spraying method of impregnation which might also suffer from the added defect of incomplete coverage and penetration of the materials being treated if the spraying were not continued to the saturation point. None of these disadvantages is inherent in the process developed. With our method, the washer remains free of DDT, and only the loads to be DDT-treated are saturated in the extractor. Since the DDT solution is applied as a spray during the centrifuging, the solution is forced uniformly through all parts of the fabrics, regardless of their thickness or form. Only the simple precaution of wearing "Neoprene" gloves is required for protecting the operator from the DDT solution, since the treated clothes are handled only in a barely moist condition on transferring the load from the extractor to the dryer. Since only traces of soil enter the mothproofing solution, it is therefore not necessary to recover the solvent from a heavily contaminated extract. Simple circulation of the solution through the activated clay removes the impurities from the treating solution. The DDT charged to the process is thus used with practically 100 per cent efficiency.

This new process provides the drycleaner with a cheap, flexible and efficient adjunct to his regular drycleaning service. Mothproofing may now be offered to the customer with each drycleaning or on a seasonal basis. The method does not interfere with the normal operation of the plant, and the cost of the treatments should be nominal.

Acknowledgment

The author takes pleasure in acknowledging the assistance of Helen L. Fehr, J. H. Koob and Julian L. Staubly in performing some of the work described.

References

(1) Commercial Standard CS3-40.
(2) A.S.T.M. D 582-41T.
(3) British Medical Journal, 1945, Page 338.
(4) Cameron and Burgers, British Medical Journal, 1945, Page 865.

** Investigators (3) agree that DDT is unlikely to cause dermatitis or other toxic symtoms in its dry form. However, when dissolved in solvents, DDT can be gradually absorbed through the skin (4) to produce toxic effects. While the amount required to produce any ill effect is very high, none should occur if the most elementary precautions are taken. There is little possibility of this occurring when using this process.

DDT DRIVES AWAY BEETLES—A piece of pure wool was treated by the new DDT process and placed with 10 carpet beetles for 28 days. The beetles refused to feed on impregnated wool and died when placed in contact with it

UNTREATED CLOTH—This sample of pure wool, not impregnated with DDT, was placed with 10 hungry beetles. The white specks in the glass are excrement of the larvae, indicating how much of the wool was eaten in 28 days.

TOTAL DESTRUCTION—10 beetles were permitted to eat their fill of a sample of pure wool, one and one-half inches square. Insects of this destructive ability annually damage more than $200,000,000 worth of U. S. wool.

NEUTRONYX 330

Non-Ionic • Surface-Active DETERGENT and EMULSIFIER with Unusual Dispersing Action

NEUTRONYX 330 is a typical example of the Neutronyx Series of non-ionic surface-active agents. The Series includes five materials, all with exceptional usefulness in detergent, emulsifying and dispersing action with the outstanding advantage of stability against hardness, electrolytes and both anionic and cationic surface-active agents. Each of these materials possesses unique combinations of surface-active characteristics, so that for a given application it is desirable to evaluate each one in order to determine the best balance of properties for a specific application. Each Neutronyx material is an excellent wetting agent in warm solutions.

PERFORMANCE

Surface Tension (Dynes per Cm.)
DuNouy Tensiometer (25°C.)

Concentration	Dynes
0.5%	34.5
0.1%	35.2
0.01%	35.4

Wetting Action (Draves Test)

Concentration	25°C.	60°C.
0.5%	215 Sec.	27 Sec.
0.2%	5 Min. Plus	56 Sec.
0.05%	"	170 Sec.

Detergency

Hunter Reflectometer with standard soiled cotton before and after washing.

Concentration	Per Cent
0.1%	13.5
0.05%	11.9
With addition of 0.25% TSPP	
0.1%	22.8
0.05%	15.0

PROPERTIES

Neutronyx 330 is a reddish brown oily liquid readily miscible with water and with alcohol. It contains over 95% of the active ingredient — a polyalkyl ether condensate of fatty acids.

It is compatible with moderate concentrations of acids and alkalies and with hard water, electrolytes and both anionic and cationic surface-active agents. It disperses insoluble anionic-cationic complexes. Soluble in both water and organic solvents.

It is stable to heat and has perfect stability in both normal plant use and in storage.

POSSIBLE USES

- **EMULSIFYING AGENT** in manufacture of cosmetics, industrial cleaners, insecticides, and for the production of emulsifiable oils. Degreasing and fat liquoring in leather making.
- **SEQUESTERING AGENT** in manufacture of foam rubber.
- **DISPERSING AGENT** in making DDT dispersions. Particularly useful in dispersing heavy metal soaps and the insoluble complexes formed when anionic and cationic surface-active agents are mixed.
- **DETERGENT**, particularly in salt and hard waters. Used in organic solvents for removal of residual oils in cleaning airplane, automotive and other metal parts. Also used as a foaming and coupling agent.

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EPIDEMIC CONTROL

....with DDT, ANTU and 1080

By H. Elishewitz, Ph.D.*

Consulting Entomologist
Caracas, Venezuela

Modern insecticides and rodenticides can control plague and murine typhus by attacking all three links in the chain of the disease-complex cycle.

RESEARCH in recent years has developed effective prophylactic agents for combating and preventing outbreaks of two of the most important zoonotic infections in man,—murine typhus and plague. This control is effected through attacks on all three chains of the disease-complex cycle: the rodent reservoir, the insect (flea) vector, and the human occasional host. It has been the development of the two new rodenticides, ANTU and 1080, and the useful new insecticide tool, DDT, that has made this control possible. When the control techniques involving use of these new weapons are carried out promptly and energetically, almost complete control of epidemics is possible, as demonstrated by Macchiavello (1946). The materials must be used, however, only with due regard to their potentialities, limitations and precautions, and in a close correlation with the known biology and habits of the hosts and the vectors of the two diseases.

By now the history, potentialities, methods of use, and effectiveness of DDT are too well known to be repeated. We shall thus confine ourselves here to a discussion of its manner of use and dispensing equipment specifically in relation to the biology and breeding, resting, and feeding places of the flea vectors of plague and endemic murine typhus.

At any one time the fleas involved in the cycle will be found in three types of activities and situations:

1)—on their hosts feeding, i.e., buried amongst hairs of their murine host sucking its blood.
2)—in their breeding places, i.e., off their hosts but associated with collections of organic debris in which their eggs are laid and their larvae develop. These spots are frequently, in fact usually, but by no means always, also the nesting places of the rodent hosts.
3)—in "resting" places, i.e., free-living in the open awaiting a host.

The third situation represents the most immediate danger as far as transmission to man is concerned, followed by the second. Fleas feeding on their rodent hosts will at some future date before they become of importance as vectors be found in either of the other two locations. Control is best directed against all three types of flea habitats. The types of situations to be treated are thus:

a)—the floors of houses, warehouses, public buildings, stations, and stores including underneath, behind, and around all furniture, sacks, bales, packages, stored items, cots, beneath sleeping mats and rugs, and the resting places of pet animals; over chairs and stuffed furniture; on hanging clothing and clothing being worn; and rodent runways. Particular attention should be paid to the corners and wall-floor junctions of rooms, to cracks and holes in the floor, and between stacked goods.

The treatment of these types of places has been termed "surface application" of DDT by Macchiavello (1946). Since the fleas in these locations present the most immediate danger, these locations should be treated first in any control program.

b)—the nesting places, harborages, burrows, ledges, crevices, and holes of rats; the spaces between the walls, underneath the floor, between the foundation and walls, the roof and rain gutters in houses; privies or sewer openings; poultry sheds and pig pens; and nests and burrows of wild as well as domestic rodents around towns and in the fields.

The treatment of the hidden nesting places is termed by Macchiavello (1946) "subsurface" DDT treatment. Its purpose is to cover these places with DDT so that the adults and larvae living in the rodents' nests will be killed before they have a chance to come out into the open to bite man or to transmit the disease from rat to rat.

c)—rat and wild rodent runways (i.e., passageways or trails that the rodents use) inside or beneath houses, around the houses, and in the fields. In passing through these areas and brushing against these surfaces the rats pick up sufficient DDT on the fur of their coats to act as an immediate contact pulgicide for the fleas at the moment feeding on them. In addition, if the concentration of insecticide is high enough, the rats will carry crystals of DDT back to their nests to kill the fleas therein. These nests are frequently inaccessible to the "subsurface" DDT treatment directly. Finally, in cleaning themselves, the rats will frequently lick and ingest sufficient DDT to cause their own deaths.

The control program directed against the vector fleas should be carried out *before* the initiation of the rodenticide work in order to preclude the possibility of the fleas attacking humans when they find themselves without a murine blood source.

Materials and Equipment

When applicable, DDT in powder form is even more effective than solutions in leaving residual deposits of lethal insecticide. In all the situations requiring treatment to control fleas, since the surfaces are generally horizontal, DDT dusts are therefore recommended in preference to solutions. The dusts are highly lethal in great dilution to all the species of

* Presented January 17, 1947, before the Subcommittee on Zoonosis, 12th Pan-American Sanitary Conference, Caracas, Venezuela.

fleas and retain their effectiveness for at least one to two months. If not swept up or covered over they are effective for four to six months. The dusts are equally effective against *X. cheopis, Pulex irritans, Ct. canis, Tunga penetrans Echidnophaga gallinaceum,* et. al.

2, 5, or 10% DDT powder may be used. The 10% formula (DDT pyrophyllite or talc) is a standard formula and readily available as such commercially. The lower dilutions of DDT can be prepared by intimate blending, in proper proportions, with discarded wheat flour, fine road dust, talc, or powdered local clay. The exact concentration of the DDT used is not as important as:

1.) even distribution of the material and complete coverage of the surfaces; and

2.) applying a minimum net concentration of DDT of at least 50 to 100 mgm./meter^2. In practice, two to five times this concentration, i.e., 200 to 250 mgm./meter^2 is recommended. This is 2.0 to 2.5 grams of the 10% dust per meter^2. It is difficult with the hand equipment available, to put on any less and get even coverage.

When a 2% or 5% DDT dust is used, correspondingly but not proportionally greater quantities of the dust should be applied than if the 10% was being used.

In the dusting of the rat runs and harborages, especially holes in the wall baseboard, it is best to leave little piles of DDT dust scattered at intervals and in front of and behind the holes. The rats, through necessity, will walk through the mounds and pick up considerable quantities of dust on their feet and fur which they carry into their nests. As the DDT kills the fleas only by contact, even coverage of all harboring places is essential.

Macchiavello (1946) has calculated the cost of treating Tumbes, Perú, a town of about 10,000 population (1200 dwellings) with three applications of DDT dust at $0.37 (U.S.) a house or $0.0028 per meter^2.

The equipment to use depends entirely upon the amount of work to be done. A wide variety of sprayers and dusters are available commercially, ranging from small hand piston-types through motor driven air pressure blowers of varying capacities. Under most conditions two types of dusters will be found to be generally suitable:

a) For the covering of the general floor surface ("surface application") to kill the free fleas, a hand rotary blower type with a shoulder strap and a belt support and a capacity of 2 or 3 pounds of dust such as is used in agricultural field crop work is satisfactory. The nozzle should be flat and broad, removable, and on an elbow turned towards the floor. Rapid and even coverage can be gotten with this machine. To apply the dust with higher pressure into holes and between the spaces in the walls, floors, roofs, down burrows and nests ("subsurface application") and between stored cases, remove the nozzle and elbow and substitute a tapered straight nozzle.

b) for dusting of clothing, of individuals, of burrows, and of subsurface types of locations in general, the larger sized and sturdier hand piston-pump type of duster with a 2 or 3 foot extension tube is satisfactory and inexpensive. However, they are laborious and slow.

After the application the householder should be requested not to sweep up the DDT dust for about 5 to 7 days. Treatment should be repeated during epidemic periods at monthly intervals, during non-epidemic periods every three or four months or when the various types of pulicine indices show an increase. A well planned and supervised flea control program with DDT dust will show spectacular results within several days after its completion and break the rodent-human chain of the disease complex at one of its important links, –the vector.

Control of Rodents

TWO outstanding rodenticide materials have been developed as the result of wartime research. These have now accumulated a sufficient backlog of field experience to warrant their recommendation.

ANTU, the accepted abbreviation for alpha-naphthylthiourea, is a highly effective poison for the Norway or brown rat (*Rattus norvegicus*) but is not recommended for use against any other species of rat or other rodent. Thus its use is limited to situations where the Norway rat is a nuisance, predator, or disease reservoir. In any one locality the specific rodent fauna varies from those in other localities,–the types and populations depending upon climatic conditions, food abundance, social structure, and commercial activities in the area. Rodent control programs, therefore, must be preceded by a survey of the population density and types of rodents found in the area. The Norway rat is cosmopolitan in its distribution and in many areas very common, thus ANTU has an important place in urban and rural rodent control programs and warrants careful consideration as the material of choice where this species of rat is present.

ANTU is a fine, greyish light powder, completely insoluble in water, and non-irritating to the skin. It is soluble in ethyl alcohol, acetic acid, and dioxane. It is synthesized from alpha naphthyl amine and ammonium thiocyanate. With a melting point of 183-185° C. it is not affected by temperature changes normally encountered or subjected to in the formulation of baits; since it is chemically stable and non-volatile it does not deteriorate in storage. It has no perceptible odor and is completely acceptable to rats.

Toxicity. The following table, adapted from Diecke and Richter (1946), gives in graphic form its comparative toxicity to Norway rats, as expressed in median lethal doses (LD_{50}) for milligrams of poison per kilogram of body weight.

Table I.

Poison	LD_{50}
1080	0.22
Strychnine sulfate	4.8
ANTU	6.9
Thallium sulfate	15.8
Zinc phosphide	40.5
Arsenic trioxide	138
Fortified red squill	205
Barium carbonate	1480

On this basis, in standard rat bait formulae, as little as 2 milligrams of ANTU are all that is required for a lethal dose for an average size Norway rat. Since ANTU is odorless and tasteless, it is completely acceptable to rats and therefore meets the two prime requirements of a good rodent poison,–sufficiently toxic to kill in small amounts and acceptable.

The specificity of ANTU for the wild Norway rat is both a great advantage and a disadvantage. It is entirely safe to handle and may be

considered non-toxic to humans, cats, chickens and other domestic animals except dogs and pigs. In the latter two types, however, the lethal dose is five times higher and the animals are so much bigger that they would have to consume a considerable quantity of bait before being affected. Moreover, dogs are protected by their habit of vomiting the poison before it is absorbed. Extensive field tests have not resulted in any cases of poisoning or irritation to humans. On the basis of the data obtained on monkeys it is estimated that ¾ of a pound or more of ANTU would have to be eaten at one time to cause death to a 150 pound man. A few dogs, however, died in the Baltimore control program. Experimentally pigs have died after eating 37.5 mgm./kilo i.e., a handful (105 gms.) of 2% mixture of ANTU with mash will suffice to kill a 125 pound pig. Such quantities, however, would not normally be available to these animals.

The following table, adapted from Dieke and Richter (1946) shows the variation in species susceptibility of ANTU to different animals. Note also that there is a great variation in the susceptibility of wild Norway rats correlated with age of the animal. Suckling, weanling, and young Norway rats under 200 gms. of weight are three to ten times as resistant. The figures are LD_{50}'s expressed in milligrams of ANTU per kilo of body weight of the animal.

Pharmacologic action. Administration of a lethal dose of ANTU to the Norway rat gives rise to symptoms (dyspnea, rales, lowered body temperature) within an hour or two and death occurs within 24 to 36 hours (Ormsbee, 1944). The most characteristic symptoms in Norway rats, dogs, pigs, and mice, i.e., those animals highly susceptible to the poison (50 mgm./kilo and below) are a profuse pulmonary edema and pleural effusion. These are the result of the direct action of the drug on pulmonary blood vessels resulting in increased capillary permeability. With their lungs and thoracic cavities filled, the rats literally drown in their own fluid.

TABLE II.

Animal	*LD_{50} to ANTU*
Wild Norway rat, suckling, 0-50 gms	58.
Wild Norway rat, weanling, 51-100 gms	43.
Wild Norway rat, young, 101-125 gms	22.
Wild Norway rat, adult, 200 gms. and up	6. to 8.
Dog (*Canis familiaris*)	38.
Pig (*Suis scrofa*)	40.
Mouse (*Mus musculus*)	56.
Alexandrine rat (*Rattus rattus*)	250.
Guinea pig (*Cavia cobaya*)	350.
Wild field rodents (*Peromyscus, Citellus, Cynomys*)	400. to 600.
Rabbit (*Oryctelagus, cuniculus*)	400.
Domestic cat (*Felis domestica*)	500.
Chicken, Barred plymouth rock	4250.
Monkey (*Macca mulatta*)	4250.

Alexandrine rats, guinea pigs, monkeys, and rabbits do not show these symptoms. The main action of ANTU, thus, is injury to the pulmonary blood vessels. No other organs show any consistent lesions except liver damage in animals kept on prolonged diets with ANTU (Lillie, 1946). Normal hair growth is retarded and pigment (melanin) disappears from the skin.

Another disadvantage in the use of ANTU and a fact of considerable importance in the formulation of baits and carrying out of a control program, is the development of a tolerance by Norway rats to the drug. Upon the feeding of a single sublethal dose, the rats become acclimated to ANTU and thereafter will survive several lethal dosages. By repeated feedings dosages as high as 50 lethal doses (450 mgm./kilo of body weight) can be fed to Norway rats without their showing symptoms. This period of tolerance lasts for 3 to 4 weeks after the last ANTU feeding, during which time the Norway rats are, for practical purposes, immune to ANTU. After this period of 21 to 30 days all tolerance disappears and the rats again become susceptible to the drug. The tolerance is built up rapidly,—within 6 hours of the feeding of a sublethal dose. Therefore, the poison baits should be made up so that a lethal dose will be acquired by the rats with the consumption of just a small amount of the bait. There is no evidence of any cumulaitve toxic effect following repeated administration of sublethal doses of ANTU.

Methods of Use

ANTU is used in the same way as other rat poisons: mixed with standard bait formulae; sprinkled over food; dusted on water; or dusted over the runways and nests as a contact poison. As in any rodent control program full consideration must be given to the psychology of the rats, their innate wariness and intelligence, and their ability to learn quickly. More than one bait formula should be used. Due to the development of the tolerance to ANTU noted above, the treatment should be "one-shot." That is, a high enough concentration should be left exposed sufficiently long to give all the rats an opportunity to feed. If however, adequate control is not gotten by this first treatment, ANTU baits should be withdrawn for one to one and a half months and other rodenticides substituted.

A. Baiting:

1. 1% to 3% concentration of ANTU (16 to 48 ounces of ANTU per 100 lbs. of bait) in baits of the usual types. The higher concentrations should be used where there is a large population of young rats. The ANTU should be mixed thoroughly and evenly with any of the innumerable rat-bait formulae,—composed of meats, fish, pork grease, bread, grains, fruits, etc. Adapting the bait to the local food conditions, i.e., the food the rats normally eat, will greatly improve results. Whole kernels or ground yellow corn will be found to be highly satisfactory under most conditions. Examples of typical bait formulae are:

   a. 1 oz. ANTU to 6 lbs. chicken mash (= 1%).
   b. 1 oz. ANTU to 6 lbs. mixture of ground hamburger and rolled oats.
   c. 1 oz. ANTU to 6 lbs. mixture of peanut butter and rolled oats.
   d. 2 to 3 oz. ANTU to 6 lbs. finely ground grain (e.g., yellow corn) (= 2 to 3%).

Prebaiting will also add greatly to the efficiency of the treatment since it is important when using ANTU to kill all the rats with the first application. This procedure consists in placing unpoisoned bait in the areas to be treated for three or four days before poisoning starts, to allow the rodents to become accustomed to the food placement and to obtain data on the most desirable bait base. At the end of this time the required amount of ANTU is then added to the bait.

2. Dust ANTU lightly on and around freshly cut fruits, vegetables, meats, or grain, e.g., sliced apples, fish, chicken heads, tomato, meat, potato, sweet potato, corn cantaloupe, watermelon, whole wheat kernels and the hard-boiled white and yolk of eggs. Fresh ears of corn the kernels of which have been slit by running a knife lengthwise

(*Turn to Page* 151)

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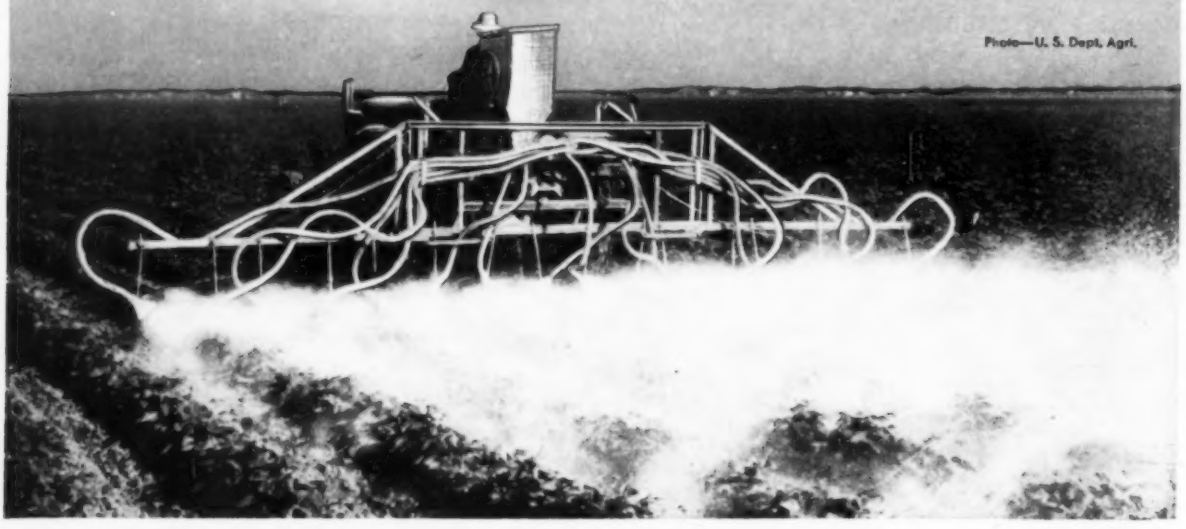

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AIR DEODORIZERS

By Milton A. Lesser

THE last few years has seen a tremendous upsurge of interest in preparations for freshening and deodorizing the air in the home and in other places where people gather. Undoubtedly, some of this interest has been fostered by advertising and publicity. Air conditioning may have had an influence, too. Whatever the causes, it cannot be denied that the American public is becoming increasingly fastidious, not only with regard to "B.O.," but also to odors in their surroundings.

The odors of cooking foods, the stale smell of the air where people have smoked and perspired, the mustiness of little used rooms—all of these and many others form the targets for the action of air deodorizing products. Then, too, one cannot overlook the interesting possibilities of introducing a pleasant odor into the air to create a mood or enhance an atmosphere. As remarked by Crocker, (1) odors in the air, or their absence, can be a powerful social asset or deterrent. "Unless we are indifferent to esthetic values," says he, "we should not overlook odor control of the air, whether it consists of removal of an unfavorable odor, presentation of a pleasant odor, or maintenance of an existing odor."

By definition, (2) a deodorizer is anything that destroys or masks offensive odors. In a broader sense, however, especially as it pertains to air, deodorization has come to mean not only the removal of odor, but its change to a more acceptable or less noticeable character. (3)

There are many ways to deodorize the air. One interesting report (4) lists nine mechanisms by which this may be accomplished. These include: oxidation, alkalization, adsorption, antisepsis, washing action, chemical combination, electrostatic precipitation, catalysis, and reodorization. The mere fact that there are so many methods of attack indicates that air deodorization is not a simple problem and that no one method provides the answer to every odor difficulty. It is also obvious that the more complicated, mechanical methods for deodorizing air are not feasible for the household, at least not at present.

Broadly speaking, there are three generally applicable methods for deodorizing the air of confined spaces like rooms, offices, restaurants, theaters, sick-rooms, rest rooms, railroad cars and such. The first two depend on the use of various substances which, when dissipated into the air, "neutralize" the offensive odor by masking or covering it with a more pleasing one. Such materials, usually in the form of liquid preparations, produce their effects either by evaporation from an open container or by spraying from a closed container. The third method of air deodorization depends on the use of fairly simple mechanical devices which cause offensive odors to be adsorbed by substances like activated carbon, silica gel, or alumina, or to be absorbed by certain special solutions.

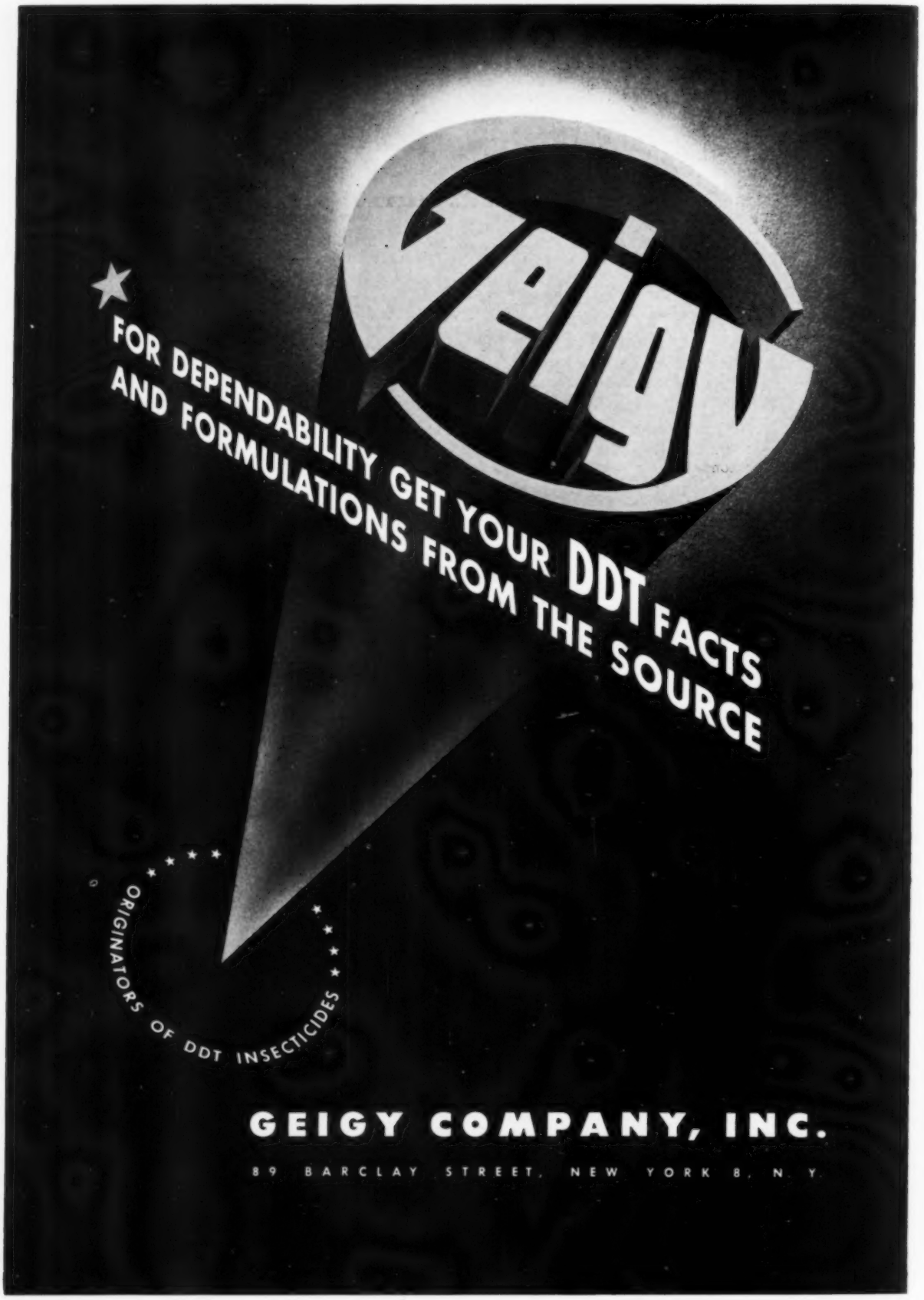
The liquid preparations used in open evaporator and closed spray systems have very much in common. Indeed, they are often used interchangeably. In the main, these preparations consist of aromatic substances, like essential oils, dissolved or dispersed in a diluent or vehicle such as alcohol or water. Solution of formaldehyde is often included as an essential component.

The chief ingredient of these compositions is a perfuming material which serves to replace an unpleasant odor with a pleasant scent. This masking perfume may consist of a single essential oil or a combination of such oils. These oils can be blended with various other natural or synthetic aromatic substances to produce more desirable or more rounded effects. Quite a number of preparations, especially suitable for use in air deodorizing, have been developed by manufacturers of perfuming materials.

Obviously, the type of material employed must be chosen with care. Its final odor should not be conspicuous, nor should it be heavy and tenacious. Light, fleeting odors are generally preferred. (1, 5) Reilly's (6) study indicates that the range of odor popularity is somewhat in the following order: "bouquet" and "mint" fragrances, pine, cedar, eucalyptus, lavender, and oriental combinations. In some quarters, perfumes of the so-called sanitary type rate rather high. Thus typically "clean" odors can be obtained with combinations of methyl salicylate (wintergreen), thymol and eucalyptus.

These perfuming materials may be brought into solution in a suitable grade of specially denatured alcohol. Isopropyl alcohol is also frequently recommended. Its characteristic odor is not considered especially important since it is readily covered by the perfuming ingredients. (7) Moreover, the use of isopropyl alcohol avoids most of the red tape associated with the procurement of ethyl alcohol.

However, the alcohol requirement can be greatly reduced or en-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tirely avoided by the employment of water-soluble or solubilized perfuming compounds. Essential oils and other difficultly soluble materials can be dispersed by means of emulsifying agents. Quite a number of emulsifiers are suitable for such purposes and deodorizer formulators might do well to look into the potentialities of some of the newer agents. It should be noted, in passing, that the presence of alcohol in an aqueous vehicle provides a certain "lift" or freshness generally not obtainable by other means.

Although there are those who do not agree, most workers consider formaldehyde a major raw material in compounding air deodorizers. Commercial formaldehyde solution, or formalin, is usually provided as 40 per cent concentration in water. Authorities differ in their views regarding the function of formaldehyde in air deodorizers. Some attribute its effectiveness to a combination of chemical properties, while others hint that it may act by a dulling or narcotic effect on the olfactory nerve. (1, 4) In a well formulated product, the irritating odor of formaldehyde is effectively covered by the perfuming agents, but one cannot overlook the fact that many people are sensitive to it. A standard component of many deodorizing compositions, it is said (5) that formaldehyde is especially useful in sick rooms and hospitals for dispelling odors associated with certain diseases.

Probably the simplest air deodorizing device, requiring a minimum of attention, is a dish or other shallow vessel containing a volatile substance which evaporates at room temperature. Almost any pleasant-smelling volatile substance may be used in such elementary open container systems.

Of course, numerous modifications of this simple, basic type of deodorizer are possible. The deodorizing blocks or cakes seen in washrooms and restrooms may be considered familiar examples. Vaporizing slowly and providing prolonged action, they generally consist of naphthalene or paradichlorbenzene, or mixtures of the two. Various other odor-covering substances, generally of a strongly antiseptic nature, may be mixed with the basic ingredients.

Absorbent materials like cloth, blotting paper, porous ceramics, wood and such may be impregnated with perfuming agents to form effective, often decorative means for combating unwanted odors for short periods of time. Products in pad form, made by impregnating absorbent paper, have been described in patent specifications. (8)

WICK-TYPE deodorizers are currently the most interesting and promising of all open system air fresheners. By the use of absorbent wicks, dipping into a suitable solution, it is possible to obtain more or less sustained air deodorizing effects. The solution, drawn by capillary action, rises on the wick and evaporates to perform its air freshening function. Quite a large vaporizing surface may be obtained; this depending on the size and shape of the wick and the distance it is pulled out of the container.

Of course the principle of the wick vaporizer is far from new; going back to the first wick-type lamp. Nor have air deodorizer manufacturers overlooked its possibilities in the past. In one older product the wick was a flower which drew up an oily perfume through a long stem from a small bottle. Working continuously, though weakly, such vaporizers acted quite effectively to overcome musty odors and the like. (3) Modern packaging design has greatly improved the effectiveness of such products.

There is little doubt that interest in wick type deodorizers was stimulated following the exploitation of Paschal's patent, (9) granted in 1943. With chlorophyll as the novel ingredient, the solutions described in this patent are not limited to use by evaporation in open containers, including special devices for air conditioning systems. The preparations may also be applied by spraying. In the formulation method given by Paschal, 3 ounces of chlorophyll are mixed into a one gallon solution of water and alcohol. Maintaining a temperature of 80° to 85° F., 16 ounces of commercial formaldehyde solution is added slowly with violent agitation.

Although there is some skepticism regarding the actual value of chlorophyll, (10) the patent claims that it serves as an "atmospheric refreshant." The employment of formaldehyde, it is stated, permits the chlorophyll to be used more effectively. Whatever its function and mode of action, it should be remembered that not too much is known about chlorophyll; even so it has found new and important uses in medicine. (11)

Obviously, there are quite a number of compositions that may be used in wick type deodorizers. For example, it has been suggested (10) that a suitable solution may be made by using a sufficient quantity of water-soluble perfume, plus from 4 to 8 ounces of solution of formaldehyde, per gallon of water. If desired, a penetrant or wetting agent may be included to "wet" the wick and increase its efficiency. However, any material that tends to clog the wick and slow its action should be avoided. The inclusion of some alcohol will also aid in evaporation.

Perfume emulsions are also suitable for use in wick type deodorizers. Here it is especially important to avoid materials that will plug the wick and render it inefficient. (5) An illustrative method (12, 13) for making an emulsified air-odor neutralizer for wick type evaporators is as follows:

	Parts
Siberian fir needle oil	40
Wintergreen oil	5
Clove oil	5
Spearmint oil	5
Sassafras oil	5

This mixture of oils is combined with an equal quantity of an emulsifying agent, like a sulfonated oil, to form a concentrate. This concentrate may be stored until needed. To use it, 40 parts of the concentrate are mixed with 200 parts of distilled water.

Heat is often employed to hasten volatilization of air deodorizing substances. The burning of incense in ancient days to cover the odor of closely crowded, inclosed spaces is still practiced today. Incense powders and molded incense mixtures still enjoy a substantial market. The

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"modern" counterparts of incense burners for volatilizing perfumed liquid preparations range all the way from a dish on the radiator to ornamental lamps and special gadgets, some patented, (14) for utilizing the heat from electric bulbs.

Even in a fairly large room, only small quantities of heat-volatilized mixtures are needed, otherwise the odor will be as unpleasant as the one it was intended to cover. A simple mixture that may be used as a spray or evaporated by the heat of an electric bulb is made from: (15)

	Parts
Solution of formaldehyde	6
Lemon oil	3
Eucalyptus oil	3
Alcohol (95%)	40

When evaporated by heat, 20 to 40 drops of the above solution, mixed with a little water, are quite sufficient to neutralize tobacco smoke and other stale odors in a good-sized room.

Also suitable for use as a heat-volatilized deodorizing vapor or as a spray is a preparation given by Belanger: (16)

Thymol	80 gr.
Pine oil, distilled	½ oz.
Oil of spike lavender	½ oz.
Potassium permanganate	8 gr.
Isopropyl alcohol (99%)	12 fl. oz.
Water, to make	16 fl. oz.

Products of this type have also been patented. Thus, a small quantity of the following mixture, on being slowly evaporated by a heating device, is claimed (17) to effectively deodorize the air of theaters and meeting halls without producing an undesirable odor of its own:

	Parts
Camphorated oil	5
Menthol	5
Alcohol	90

OF pertinent interest is a so-called "odorless" deodorant which was introduced several years ago, "OD-30," being one of the most successful of these products commercially. Sold as a powder to be mixed with water, the resulting liquid can be vaporized in a shallow vessel on a stove or radiator, or sprayed into the air to neutralize unpleasant odors without introducing any new odor into the atmosphere. (6) Claimed to destroy odors by oxidation and not by a masking action, the product received considerable publicity. Its active ingredient is said (18) to be potassium permanganate in a medium made alkaline with borax and bicarbonate. The efficacy of the product depends upon a catalyst, the nature of which has not been divulged.

Air deodorizing sprays rate very high as means for ridding the air of unwanted odors. Years ago such sprays found their most important uses in cleaning the air of theaters and other public gathering places, but today their use has been greatly extended and they find general application where it is desired to combat stale odors or unpleasant smells. Sprays are easy to use, are prompt and efficient in action and are fairly simple to make. Deodorizing sprays should produce a fresh, clean, pleasant smell, must be non-irritating, and must not fade, stain or discolor clothing, drapes or upholstery at the concentration at which they are used. (7)

Sprays are used in either hand or power sprayers, or in automatic diffusors. There has been a trend recently toward spraying air deodorants into the filters of air conditioning systems. This helps to assure good distribution and creates a satisfactory effect. (3) Looking to the future, it is quite possible that experience gained with insecticidal aerosol bombs will be extending to the air deodorizing field. By dissolving the perfuming or neutralizing materials in solvents like the "Freon" gases, it is quite probable that a room can be deodorized merely by turning a nozzle screw and permitting the expanding vapors to do their work.

Many sprays consist of diluted alcohol or isopropyl alcohol, containing one or two ounces of perfuming oils per gallon, but there also are all-water types using solubilized oils, or oils dispersed by emulsifiers. Although there is no real line of demarcation, deodorizer sprays may be divided roughly into four classes: those with alcoholic vehicle, those with alcohol-water vehicles, emulsified preparations, and concentrated products.

Quite a number of formulas are available to illustrate the first class of deodorizing sprays. Quite simple to manufacture, their alcohol base makes them more volatile than water-containing vehicles. For this reason they are considered more effective than other types of sprays. Indicative of alcohol-based formulations is the following "pine" deodorizing spray: (19)

	Parts
Pine oil	250
Geranium oil	5
Bergamot oil	5
Lavender oil	15
Rosemary oil	10
Bornyl acetate	15
Isopropyl alcohol	700

Occasionally, other types of solvents are recomended. For example a patented, (20) sprayable air deodorizer consists of a mixture comprising benzyl alcohol with smaller quantities of myrrh resin, anisaldehyde, bergamot oil, and phenyl ethyl alcohol.

To reduce costs and yet retain some of alcohol's benefits, the alcoholic component is sometimes diluted with water. This is illustrated in the following example (5) of a spray with an aqueous alcohol base:

	per cent
Menthol	3.0
Cinnamon leaf oil	3.0
Bornyl acetate	1.0
Lemongrass oil	10.0
Safrol	2.5
Tincture of benzoin	5.0
Distilled water	10.0
Denatured alcohol	65.5

THE use of emulsifying agents permits the dispersion of essential oils in water without calling upon organic solvents, and with a consequent saving in manufacturing costs. Depending on the amount and kind of emulsifier used, the final product may be clear or milky. In the latter case, a small amount of coloring material, in line with the odor of the perfume, may be included. As with all types of air deodorizing perfumes, it is frequently more expedient for the manufacturer to purchase a prepared material rather than to compound his own aromatics. This is illustrated in the following combination in which the formation of triethanolamine oleate provides the requisite emulsifying agent:

	per cent
Perfume compound	45.0
Oleic acid	3.0
Triethanolamine	1.5
Distilled water	50.5

Sprays of this class may include formaldehyde. They are usually composed of perfume oils, formalin, water

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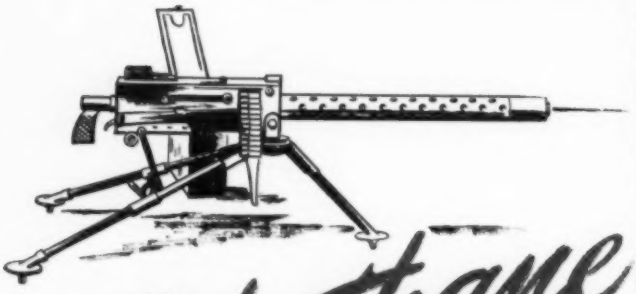

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and an emulsifier. Perfuming oils, with or without emulsifiers, are available for such formulations. Where the odorizing agent has already been solubilized with an emulsifier, all that is required is to add it to water with a suitable quantity of formalin to provide a finished deodorizing spray. The usual proportions are 3 ounces of perfume oil and 3 ounces of formalin per gallon of water. Where an emulsifier must be added, it should be selected to provide maximum stability with the other components of the spray. (5)

Concentrated sprays, to be diluted with water before use, are especially useful where considerable quantities are employed as, for example, in theater, ballroom, restaurant, and hospital maintenance. Offering savings in bulk, shipment and storage, concentrated sprays may consist of solutions or emulsions. An example of the former type is given by Harry (7) in the following preparation, which is diluted in a ratio of one ounce per pint of water before use:

	Parts
Formalin	10
Isopropyl alcohol	50
Water	30
Perfume (bouquet)	10

Another such product, to be diluted in the same ratio, has been suggested in several sources (15, 19) as follows:

	Parts
Pine needle oil	2
Formalin	2
Acetone	6
Isopropyl alcohol, to make	20

A further, equally simple, solution-type concentrate may be made from: (21)

	Parts
Thyme oil	1
Pine needle oil	19
Formalin	40
Alcohol (95%)	200

For use as an air deodorizing spray, dilute one part of the above solution with 50 parts of water.

Although many other agents are available, soap still serves an efficient means for making emulsion type spray concentrates. Its use is illustrated in the following base formula (15) which can be adapted to meet various requirements by the use of different perfume compounds:

	Parts
Soft soap	3.0
Denatured or isopropyl alcohol	3.0
Perfume compound	2.5
Formalin	2.0

For use as a spray, 2 ounces or less of this concentrate are mixed with one gallon of water. To provide a spray suitable for theaters and the like, the following perfume compound may be used in the proportions indicated:

	Parts
Benzyl acetate	2.0
Geraniol	1.0
Phenyl ethyl alcohol	1.0

The following pine odor compound, when used in the above base, is said to be particularly suitable for use in buses to combat the odor of gasoline fumes:

	Parts
Pine oil	1.0
Lavender oil	0.5
Bornyl acetate	2.0
Geraniol	2.0

Another emulsified concentrate, in which the emulsifying soap is formed *in situ*, has been given in a foreign source (22) as follows:

	Parts
Alcohol	100
Oleic acid	100
Triethanolamine	48
Formalin	10-25
Perfume	25-50

Saponify the oleic acid with the triethanolamine in the alcohol at a temperature of 60° C. Add the formalin and the perfume and mix. This is used as a spray by diluting 10 to 25 parts with 1,000 parts of water.

A THIRD generally useful method of air deodorization, based on the physical absorption of odor on a solid surface, has been used quite extensively in industry to remove obnoxious smells. (23, 24) Special installations are usually required, but small, compact and portable mechanical units have been developed that are suitable for home and similar uses. In these devices the air is forced by a fan over a rather thick granular layer of absorbent material which removes the odors. (1) Activated carbon is the best material and the one most used for the purpose, but silica gel and alumina are also employed as odor absorbents. Occasionally natural silicates, such as activated clays and kieselguhr, are used. Perforated canisters, without any mechanical attachments, containing activated charcoal, are available for controlling odors in refrigerators, pantries and similar storage spaces.

Recently a new type of mechanical air deodorizer has been made available for use in hospitals, offices, laboratories, homes and elsewhere. The deodorizing unit is a compact portable machine which is equipped with a fan that draws the air over an aqueous odor-absorbing solution. This aqueous solution, which is patented, (25) contains 2.5 per cent sodium hydroxide and 1.2 per cent mercuric iodide. Tests (26) with the machine and the solution indicate that the combination is not only effective for deodorizing the air, but also has antibacterial action against air-borne organisms.

The use of air deodorizers is increasing and, in general, they have a record of being quite effective. Nonetheless it is evident that there is still room for more and better deodorants and improved methods for using them.

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(Turn to Page 151)

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Bacteriological Evaluation of Cationic Germicides

Adrien S. DuBois
Fuld Bros.

KLARMANN and Wright (9) presented a most interesting account of the germicidal performance of cationic germicides, which has provoked an extraordinary amount of discussion. They demonstrated the inapplicability of the F.D.A. method of determining phenol coefficients (21) for the evaluation of the antibacterial activity of high-molecular amines and quaternary ammonium compounds, and concluded that, under the conditions of test, the "bacteria are not killed and they do proliferate again when placed under favorable conditions, and particularly upon elimination of bacteriostasis."

The purpose of this paper is to present evidence, both original and from the literature to (a) show that the procedures suggested by Klarmann and Wright introduce an error, due to adsorption of the germicide, which, without justification, reflects adversely upon the activity of the cationic germicides, (b) inquire into the factors responsible for the inability of the F.D.A. technique to give a reliable estimate of the anti-bacterial activity of cationic germicides, and as a corrollary, (c) show that any testing procedure involving bacterial suspensions can not give a true representation of the efficacy of these compounds, and hence can not be used to determine whether or not they are bactericidal, except under very special conditions.

Adsorption

THE cationic surface-active agents were originally marketed as textile assistants, primarily for softening purposes (3, 6). The particular value of these products rests in the durable softness which they impart to cellulosic fibers, due to their affinity for cellulose. The tendency of these cations to be adsorbed is not restricted to cellulose, but is a much more general phenomenon. It has been demonstrated that they are adsorbed, for instance, on mineral ores (1), glass (19), charcoal (15), agar (20), proteins (10, 22), bacteria (15, 25), and yeasts (3).

In the application of the F.D.A. technique to these materials, adsorption would therefore be expected to cause complications. As a matter of fact, it has been customary in many laboratories to saturate the walls of the pipettes with the surface active cations, in order to minimize the possibility of errors due to their adsorption, especially at low concentrations.

In the "semi-micro" modification proposed by Klarmann and Wright, the ratio of available glass surface per unit volume is greatly increased over that prevailing in the standard technique. Consequently, much more surface active cations should be removed from the solution through adsorption by the glass. The same is true of their proposed method using glass strips, but is even more significant with the "filter-paper" technique.

We have attempted to determine the magnitude of the error introduced by these modifications by measuring the adsorption under the same conditions of test. For instance, following exactly the "semi-micro" technique, a solution of 1:6000 alkyl dimethyl benzyl ammonium chloride was found, after carrying out the test (without bacteria), to be 1:7000, while a 1:8000 solution became 1:9000. With 9-octadecenyl dimethyl ethyl ammonium bromide, the following figures were obtained: for 1:4000, 1:5000, for 1:8000, 1:10800. With p-tert. octyl phenoxyethoxyethyl dimethyl benzyl ammonium chloride, a 1:8000 solution became 1:10800. This adsorption effect should become even more pronounced at lower concentrations. However, the method of estimating the concentration used in our experiments, viz. that of Hartley and Runnicles (5), does not allow accurate results to be obtained beyond the range tested. For this reason, it was easier to secure results using the "filter-paper" technique, since the amount of adsorption was greater. In this series of tests, 3 pieces (10 x 20 mm.) of Whatman filter paper No. 14, were weighed and placed in contact with 5 ml. of the solutions of cationic compounds for 10 minutes. The concentration of the residual solutions was estimated. The results are reported in Table I.

TABLE I.
Adsorption of cationic germicides by filter paper.

Compound	*Aver. wt. of paper*	*Titration* *before*	*after*	*Concentration* *before*	*after*	*% Adsorbed*
"BTC"	.0661	0.93	0.72	1:5000	1:7000	30
	.0695	0.44	0.39	1:10000	1:12000	17
"Onyxide"	.0689	1.01	0.87	1:5000	1:6500	23
	.0676	0.49	0.37	1:10000	1:14500	31

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The values are averages of 5-7 determinations in each case.

The data presented above indicate that the adsorption in this modified test can be very appreciable. The results are in agreement with the assumption that cellulose adsorbs a maximum of about ½ per cent of its weight of the cations. According to the laws governing adsorption, the ratio of the amount adsorbed to the concentration increases with decreasing concentrations. Hence in this "filter-paper" technique, as the concentration of the solution of the cationic germicides becomes lower, a proportionately greater amount will be adsorbed and thus removed from solution, leaving the residual solution considerably weaker.

These experimental findings indicate that the suggested methods are not applicable to high-molecular quaternary ammonium compounds, since in those tests a large portion of the material is removed from solution, and therefore is not available to act upon the bacteria.

Bactericidal action

THERE is an extensive literature presenting indirect, clinical or practical, evidence to show that the high molecular quaternary ammonium compounds are effective antiseptics and disinfectants. Disregarding this portion of our knowledge, there still remain data indicating that these compounds exert a definite bactericidal action. Some of this evidence, selected for its freedom from the controversial questions raised by Klarmann and Wright, will be reviewed briefly.

Gottsacker (4) carried out tests in which several persons washed their hands, which had been heavily contaminated with a virulent strain of *Pneumococcus,* for 5 minutes in a 1:2000 solution of "Zephirol." The hands were then kneaded well in 10 ml. of serum, and 0.5 ml. of this rinse was inoculated into mice. None of the animals died, while the controls showed a high mortality. A similar observation was reported by Neufeld et. al. (14).

Nagel (13) treated bacterial suspensions with "Zephirol," centrifuged and washed the cells three times, then resuspended and subcultured them into broth. He found that a 1:4000 dilution killed *Staphylococcus, Streptococcus* and *Pneumococcus* in one minute.

Using a similar procedure, Miller (12), showed that a 1:4000 solution of "Zephiran" killed *Meningococcus* in 15-30 minutes, while a 1:8000 solution killed in some cases.

Spaulding and Bondi, (23), Pierce and Tilden (18), and Nungester and Kempf (16) using similar techniques, in which the tails of mice are heavily contaminated with *Pneumococcus,* treated with the surface-active cation and then inserted into the peritoneal cavity, observed a high degree of effectiveness for the cationic germicides.

Hotchkiss (8) has demonstrated that surface-active cations cause an irreversible damage to the cellular membrane of bacteria, which results in the release of soluble nitrogen and phosphorus compounds from the cells and the death of the cells.

DuBois and Dibblee (2) have investigated the viability of bacteria exposed to surface-active cations, under conditions where bacteriostasis was eliminated. The tests were carried out by inoculating 5 ml. of a 1:10000 solution of alkyl dimethyl benzyl ammonium chlorides (BTC) with 0.5 ml. of a 24-hour culture of *E. typhosa.* After five minutes, the tubes were centrifuged (10 minutes for the complete operation), the supernatent fluid decanted, and 8 ml. of sterile water were added. The bacteria were carefully resuspended by scraping the sides* and mixing thoroughly, after which the tubes were centrifuged again and the water decanted. This process was repeated twice more, after which 8 ml. of broth were poured into the centrifuge tube, mixed and incubated at 37°C. It is significant that growth was never observed in any of the tubes. To further insure against bacteriostasis, the tubes were reinoculated with a loopful of a 24-hour culture of *E. typhosa,* and all showed growth after 24-hours. As a supplementary precaution, the third wash water was decanted into 100 ml. of broth and incubated. Here again growth failed to appear. Similar results were obtained with *S. aureus.*

Discussion

ENOUGH evidence has been presented to indicate that the high-molecular quaternary ammonium compounds do exert a definite killing action on bacteria. Hence, in view of the findings presented by Klarmann and Wright, it is necessary to find the reasons why their data is in apparent conflict with this evidence.

In the first place, the various methods suggested by these authors have one feature in common, viz. they allow an increased adsorption of the surface-active cations on glass or cellulose, thereby decreasing their concentration in the solution under test. This means that the concentrations indicated in their tables may be in error, according to our results, by at least 50 per cent. In more dilute solutions, the error may be much greater, since the adsorptive capacity of the glass and cellulose is constant, while the concentration decreases. There is a probability that at certain concentrations, most of the cations will be adsorbed, and that consequently very few will be left in solution.

The above considerations are not, however, necessarily sufficient to account for the data of Klarmann and Wright. These authors have assumed that the high-molecular quaternary ammonium compounds cause the bacteria to be precipitated onto the glass surfaces, and this assumption is a valid one.

Holmes (7), has demonstrated that cetyl pyridinium bromide spontaneously agglutinated bacteria by markedly lowering their electrical charge. This process is similar to the agglutination of bacteria by agglutinins in the presence of salts, which is believed to be due to the adsorption of the agglutinins by the bacteria, followed by the neutralization of the bacterial charge by the salts (cf. 24). The surface-active cations apparently combine these two functions.

The direct evidence presented by Holmes necessitates that the floccu-

*It was observed that the bacteria treated with surface-active cations had a very strong tendency to adhere to the glass after centrifuging, and that they were brought in suspension with great difficulty.

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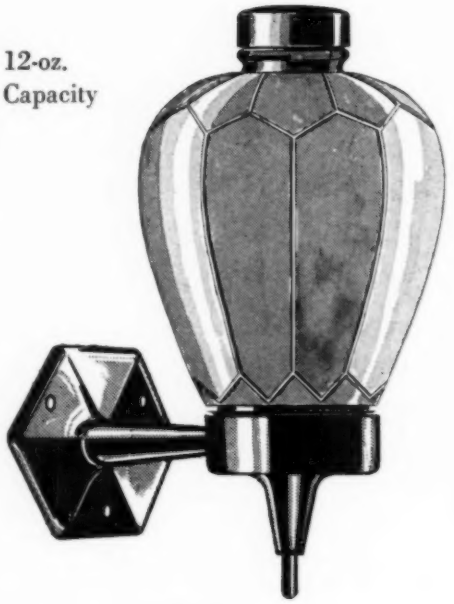

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lating effect of surface-active cations on bacterial suspensions be taken into consideration to bring the data of Klarmann and Wright into harmony with that mentioned above. One hypothesis which is able to account for all the known facts is presented below. It is based on the assumption that agglutination requires the adsorption of fewer cations by the bacteria than are necessary to cause death. This is supported by Pfankuch and Kausche's (17) finding, that, for instance, a lower concentration of "Zephirol" is required to agglutinate tobacco mosaic virus than to inactivate it.

When the cationic germicides are added to bacterial suspensions, or vice versa, there occurs an adsorption of the cations on the bacteria, which neutralizes their electrical charge. In the absence of a charge, the bacteria tend to adhere to one another to form a clump, composed of a large number of bacteria, which may remain in suspension for a time before it migrates to the wall or bottom of the tube. This migration is probably not an instantaneous occurrence. However, the agglutination itself may and probably does take place very rapidly. The clump thus formed is surrounded by a solution containing the residual cations. However, only the bacteria forming the outside layers are in direct contact with the cations. Hence there arises a condition where the outer bacteria in the clump are killed, while those trapped in the interior are not, simply due to the fact that the cations have not reached them in sufficient amount.

If, however, a longer period of contact is allowed, the cations will gradually penetrate the clump and consequently reach the inner bacteria. When a sufficient concentration has been adsorbed on the inner bacteria, the cations will be able to exert their full effect on these.

The above hypothesis enables the data of Klarmann and Wright to be fully understood. In their various suggested procedures, the cations cause the bacteria to flocculate, and hence, after the formation of clumps, only the outer bacteria are exposed to the action of the cations. From the evidence presented earlier, it must be concluded that they are killed. However, in the period of time investigated, the cations do not reach the bacteria within the clump, so that they are not killed.

The above data and hypothesis emphasize the possibility that any method for testing surface-active cationic germicides involving the use of bacterial suspensions is subject to appreciable errors, due to adsorption and agglutination. The interpretation of data obtained by such methods may, consequently, be erroneous.

There should, therefore, be no hesitation in dropping this type of test, and exploring the possibilities of methods where the same conditions probably do not prevail, e.g. the procedure proposed by Mallmann and Hanes (11) which is said to be applicable to all types of disinfectants. It seems that further research along those lines will help to clarify the present equivocal status of disinfectant testing.

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A solution containing DDT in 9 parts of odorless distillate, 1 part of ethylene dichloride, and varying amounts of an adhesive agent was sprayed on Keen's cement as an example of a porous material, and on wood painted with an oil-type paint as an example of a smooth surface. The three adhesive agents were coumarone resin, a mixture of equal parts of paraffin wax and commercial petrolatum, and boiled linseed oil. Bedbugs were exposed for 24 hours to the treated dried surfaces and examined for mortality 6 days later.

Forty-eight hours after treatment with 0.005-0.01 mg. per square cm. of DDT and the same deposit of coumarone resin, painted wood surfaces were more toxic than were these surfaces when treated with either wax-petrolatum or linseed oil. With 0.03-0.06 mg. per sq. cm., toxicity was high irrespective of the adhesive agent used. Except when treated with 0.06 mg./sq. cm. of DDT, residual toxicity of the deposit obtained with any adhesive agent diminished considerably in one month; the toxicity of the 0.06 mg./sq. cm. deposit persisted for at least 3 months.

The residual toxicity of DDT deposits on cement surfaces was approximately equal for each of the adhesive agents used. It diminished gradually over a 3-month period. Repeated washing or dusting of surfaces treated with light or heavy doses of DDT containing an adhesive agent resulted in loss of DDT. The experiments show that relatively small doses of DDT are toxic in the presence of three dissimilar adhesive agents. It may be that the adhesive agent blocks the pores of the treated surface, minimizing absorption and so increasing the amount of DDT available to the insect. S. Barnes. B. Ent. Res. *37*, 173-6 (1946).

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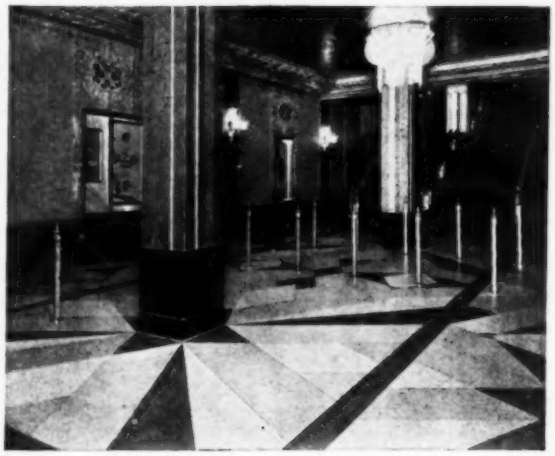

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THE seller's honeymoon is over. Competition is back in the saddle, said Jack Varley, president of the National Sanitary Supply Association, and if the sanitary supply industry hopes to maintain the prestige it has lately won, salesmen have, definitely, got to get out and start selling again. This thought summarizes conclusions on the dominant topic,—salesmanship —discussed during the 24th annual convention of the Association at the Morrison Hotel, Chicago, April 21 to 25. The gathering was a record smasher in many ways. Official attendance records showed over 800 industry representatives present, while added to that was an influx of over 1,000 invited guests. The trade show, accompanying the meeting, with 110 exhibitors filled every corner on two floors of the hotel, bringing together it was claimed, the largest display of sanitary supplies and equipment the world has ever seen.

Jules Lovinger, of Lovinger Disinfectant Co., Salt Lake City, Utah, became new president of the Association as a result of Wednesday's election, other officers chosen were: Vice president—Leo G. Peck, Peck's Products Co., St. Louis, Mo.; secretary —Martin F. Peters, Moore Bros. Co., New York, treasurer—Carl B. Lien, Lien Chemical Co., Chicago. For eastern regional vice president, Jack Gantz, Empire Brush Works, Inc., Port Chester, N. Y., was selected, and the new southern regional vice president is Erwin Zaban of Zep Mfg. Co., Atlanta. Holdover regional vice presidents are Mal Flanagan, Federal Varnish Co., Chicago, for the central region; and Wm. H. White, The Waxinate Co., Oakland, Calif., for the western territory.

Retiring President Jack Varley of Baird & McGuire, St. Louis, became, automatically, a member of the new Board of Directors. Others selected for the Board were Lester Brown, of J. Edward Brown Co., New York; Arthur A. Newfield, Bobrick Mfg. Corp., Los Angeles, E. R. Moulder, Moulder-Oldham Co., Tulsa, and James Longshore, Rex Cleanwall Corp., Brazil, Ind.

In his address, President Jack Varley declared that activities of the Board and the regional vice presidents have, in the past year, placed the National Sanitary Supply Association on a high plane of public recognition and acceptance. This influence, he insisted, must be maintained. He sees an opportunity in the many public health cleanup campaigns instituted in many sections of the country, to continue the good work with genuine benefits both to the communities and the industry.

The chemical field, Mr. Varley said, is continuously changing and things that were new yesterday are old today. "We'll never go back to the old days, old ways, old products," he said. "Synthetics have crept into the disinfectant, insecticide, soap and other sanitary supply fields and there is no point in sitting down and sighing for the good old days. We must keep our minds open to new developments, new trends, and keep our salesmen posted on them, as well."

Mr. Varley commented on the "failure of some jobbers" to contact manufacturers regarding new products. The big distributors do not hold back, he said, adding pointedly, that

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"the early bird gets the worm." Tremendous sums, he pointed out, are being spent in research to develop new products of greater use to consumers. The distributor, he declared, should give the manufacturer and his new product every benefit of the doubt.

The sanitary supply industry, he declared, is not a racket, not a get-rich-quick business. In it, he admitted, are some individuals, who push merchandise that is cheap in quality and in price. Margins are small and repeat orders few and for such persons it quickly proves to be an in-and-out business. "Devote as much time to buying as to selling," he advised. "Look over the new products and give them a trial. Don't wait for your competitor to develop a market, skim the cream off and leave the rest for you. It's only the men who are on their toes, with eyes constantly open to the ideal of top grade merchandise, of genuine value to the consumer and saleable at a profit, who can hope to survive."

EXAMINING current economic conditions, and speaking as Association vice president, Jules Lovinger of Lovinger Disinfectant Co. Salt Lake City, declared that "It's quite obvious that the economic situation is out of balance. The country faces change of some sort and probably downward."

"Be prepared and in shape for the unknown future," he advised. "Watch your inventories, so they'll not be top heavy when we start downhill. Both management and the sales department must keep up with the changing conditions and production departments must look to the merits and quality of their products, so that they will always be in the front line of consumer acceptance."

Prices, Mr. Lovinger, declared, "are too high. The public is getting price conscious and purchasing power is being endangered by inability to meet the prices. There is some trend toward price decreases, but they are few in number and only token decreases that are every day offset by hundreds of new price increases. The fact still remains that many of the nation's top-ranking corporations are making larger profits than ever before. If we do not voluntarily begin to reduce prices we'll be forced to do it later, during a depression. We can't put it off; we can't let the other fellow do it. Only lately our sanitary supply industry has come into its own and is recognized as having an important part to play in keeping the country healthy. We must do all in our power to increase the prestige we are now enjoying."

From the various regional vice presidents came enthusiastic reports of growth in membership and in interest in the organization's work, as a result of the series of sectional conferences held during the past year. Western regional vice-president Wm. H. White of Waxinate Co., Oakland, Calif., told of a membership growth from 71 to 96. Martin Peters of Moore Bros. Co., New York City, reported a membership increase from 37 to 185. Interrupting here, President Varley, revealed that Mr. Peters himself had enrolled 28 new members, a record more than double that of any other individual membership solicitor. In recognition of this achievement, he presented Mr. Peters with a memorial plaque, testifying to his good work.

Other equally flattering reports of progress were made by the central region's vice president, Mal Flanagan of Federal Varnish Co., Chicago, and by S. P. Solomonson, Sr., of Dixie Disinfecting Co., Dallas, Tex., as southern regional vice president.

Board Secretary Harry Appel of Milwaukee, Wis., reviewed the organization's early struggles and for future action suggested two proposals: organization of a simplified uniform accounting system for the industry; and a credit bureau, to help both members and jobbers.

Speaking for the Board, S. J. Bockstanz of Bockstanz Bros., Detroit, Mich., recalled the Association's early history and asserted that "Now that we're out in the clear, we should have no difficulty in going on to still greater heights of service." Closing Tuesday's sessions, Major Hamilton Long, discussed the impact of current political and social influences on American life.

WEDNESDAY'S top program speaker, J. L. Brenn, president of Huntington Laboratories, Huntington, Ind., declared, in an address on "Training Salesmen to Sell," that "What's needed to create a firm foundation for your business is not a fast talker but a man who, when he faces a prospect, can present the idea that your products can render him a service." A successful sales training course, Mr. Brenn asserted "should start before the salesman is hired. The company must have sound policies and products and means to pay the salesman enough to keep him satisfied. The sales manager, himself, must be as smart as the man he expects to train. Too many sales managers are good chair warmers, but not able to face the prospect on the firing line."

Out of a group of 120 college youths to whom he recently spoke, he related, only seven said, in response to his question, that they would like to make selling their career. He deplored this lack of interest in salesmanship among the younger generation and offered several suggestions for indoctrinating them with the idea that selling is a worth while profession. The successful salesman, he continued, should talk in easily understood words and must not take it for granted that everyone knows all about the product. His story must be repeated again and again. The fact must be recognized that after the age of thirty our minds begin to lose their plasticity and a never-ending educational effort must be made, over and over, as in the Army's practice of orientating and briefing the new soldier.

Drawing on experiences gained from his own company's outstanding sales training program, he asserted that the salesman must be taught to organize himself toward his job. He must recognize the prospect's needs for the product, r e a l l y know the product himself, and be able to operate the floor machine or clean

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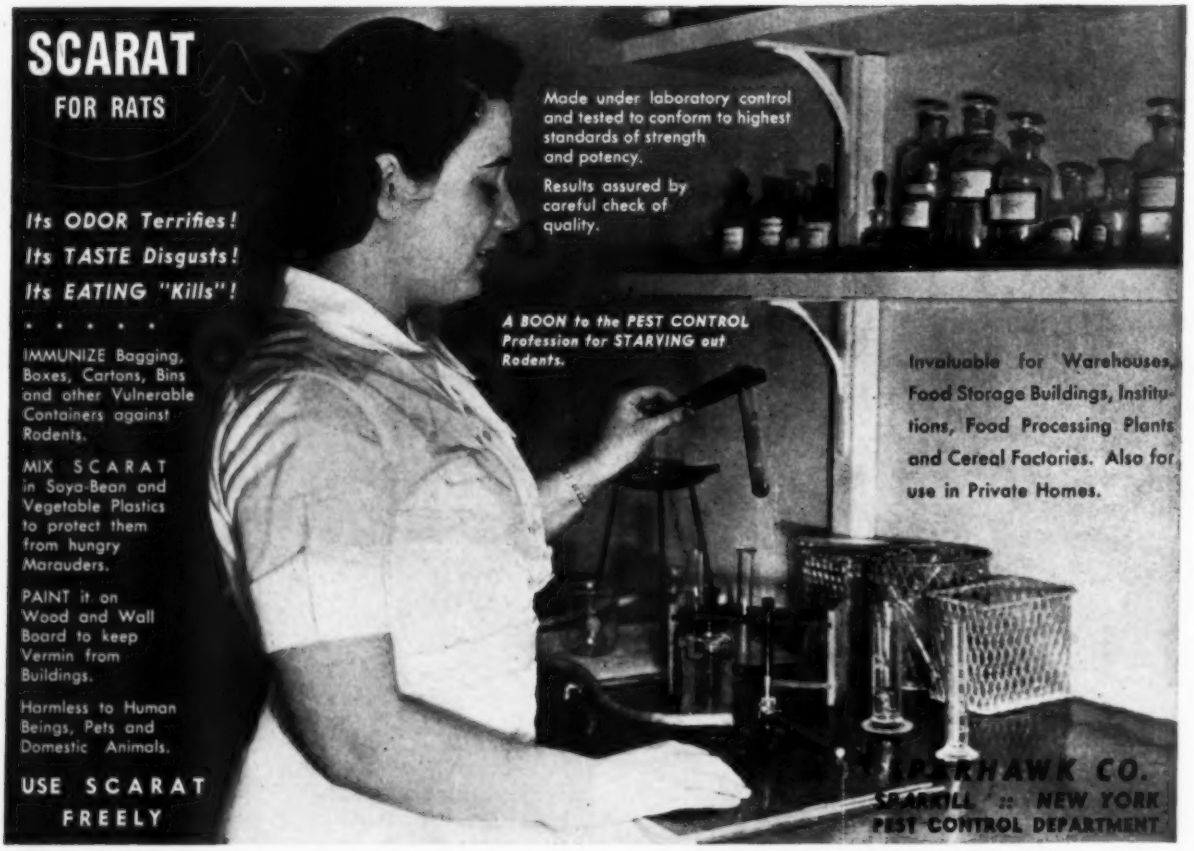
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out a toilet bowl with the new brush. "Above all," he added, "you've got to teach your man to be genuine, to ring true. Synthetic knowledge or enthusiasm is not worth ten cents. If you don't believe what you say, you cannot get anyone else to really believe it. Teach your man how your product can render the prospect a service and, even with an old product, your operations will be successful."

Whether or not credit losses should be charged back to the salesman who has already received his commission on the sale evoked lively differences of opinion during a panel discussion of "Salesmen's Compensation." Close attention was given Louis Herzog's outline of the position taken by his company, Riddiford Bros., Chicago. "We feel," said Mr. Herzog, "that the salesman is not an authority on the customer's credit. He does not pass on it, and, since it is up to the credit department either to accept or reject the order, the responsibility for the loss is ours, not the salesman's."

Salesmen expect and should receive compensation in line with their dignity and responsibility, Mr. Herzog declared, but, too, they must produce a sufficient volume of sales to justify this compensation. Riddiford Bros., he said, base the pay rate, not on gross amount of the sales, but on the profit from it.

The salesman must be able to make a living, declared David Ginsburg of Scientific Supply Co., Denver, Colo., but the company, too, must be able to show a profit. Since total net varies with the volume of business done, a flat commission plan of compensation might mean selling some items at a loss. To avoid this, a sliding scale should be adopted, providing one rate of pay on items carrying a high profit and another on items producing less for the firm. Thereby, he said, both company and salesman have opportunity to grow. And, since the salesman, naturally, would be influenced to push the higher profit items, while ignoring the rest, a bonus or prize system could be instituted, with awards payable only if a quota is exceeded on specified items.

Lien Chemical Co., Chicago, "tries to give the salesman as big a share of the gross profits as we can," said the third member of the panel, Carl Lien. As an ideal guide, he quoted the Golden Rule of Confucius, "Do not do to the other man what you wouldn't do to yourself." "Apply that and you're bound to come out on top," he asserted.

A PANEL discussion of "Salesmen's Territories," brought from Jay H. Zucker, president of State Chemical & Mfg. Co., Cleveland, O., the principle that the size of a man's territory should be "just as much as can be productively covered to the advantage of his firm and no more." He opposed the idea of "exclusive" territories, suggesting that greater results could be attained if one man called on industrial accounts, another on churches, and others on schools, bowling alleys, etc. In small communities, he conceded, this might not work. The specialty item man, however, and the regular man, could, he insisted, work together in the same territory to great advantage.

Earl G. Rogers, general manager of Cleaning Materials & Chemical Co., Pittsburgh, described his company's plan of laying out a territory in the form of a wheel, with the man's home town or a large city as the hub. Thus, he said, the man would not be too far from his home town and personal interests and, being thereby made happy would be a better salesman.

Following Wednesday's lively debate on sales compensation from the standpoint of practical experience, Thursday's scholarly examination of this subject by Perry Addleman of Booz, Allen & Hamilton, management counsellors, served to clinch the discussion and convincingly bolster up and drive home the many principles now guiding many in the industry in their solution of this problem. Two motion pictures, one on "How to Make a Sales Presentation Stay Presented," and the other on "The Autopsy of a Lost Sale," rounded out the admirable presentation of the subject of salesmanship provided by the program committee and executive vice-president, Leo J. Kelly.

Current bankruptcy figures call for caution in credit operations, warned Arthur Jones, general credit manager of Armour & Co., Chicago, in discussing credit problems. Failures in 1936, he said, numbered 26,355, with liabilities of $668 millions. In 1945 there were 814 failures, with $30 millions liabilities. In 1946 the number increased to 1130, and liabilities were $70 millions, while for the first quarter of 1947 the trend is still upward.

"Things are changing," said Mr. Jones. "Credit risks are again becoming prevalent and credit departments are again getting busy." Failures don't just happen, he declared and, in examining the reasons for them, he placed principal responsibility on the lack of capable management. "If I were running an organization," asserted the speaker, "everybody in it would be sales minded or get out. We must recognize the value to us of the customer. Without him we close up."

JOTTINGS

A new feature of the meeting was a formal hospitality program for women in attendance, directed by Mrs. Helen Stevens Fisher of Chicago, well-known radio personality, author and authority on party entertainment. More than 100 ladies participated in the sight-seeing trips, visits to radio studios, fashion shows and other events arranged by Mrs. Fisher.

—♦—

James Wheeler, Jr. of Essential Chemicals, Inc., Milwaukee, Wis., got a big hand at Tuesday's sessions when Vice-President Kelly "unmasked" him as a "phoney" after Wheeler had attempted to convince the crowd that he was a "Senor Ferdinand" from Madrid, Spain, visiting the U. S. to invest in a huge volume of up-to-date sanitary supplies.

—♦—

Shin Lehrman of A. T. Lehrman & Sons, Harrisburg, Pa., can write good money-pulling letters. For the second year in succession he won the "Gold Medal" award for outstanding credit collection letters in a contest conducted by a Chicago business magazine publisher. At Tuesday's session

POLISHES CLEANERS INSECTICIDES WAXES SOAPS DISINFECTANTS

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Vice-President Kelly presented him with the publisher's medal and certificate attesting to the excellence of his efforts.

—— • ——

Lou Bourd, captain of Andy Frain's ushering organization, which "policed" the crowds, thought it was a good convention. Only two or three "sample hunting" gate crashers gave him trouble. Nobody got hurt or sick, the bars didn't do "much" business and everybody seemed to be keeping his nose to the grindstone.

List of Exhibitors

EXHIBITORS at the immense trade show, their products and representatives at the booths included the following:

Chemical Service Co. of Baltimore—Disinfectants, insecticides, deodorants, waxes, cleaners, soaps; Bernard Freudenthal, president; Louis Ruff, Morris Skaist, Fred Diener.

H. O. Mann Co., Chicago; Standard Chemical Co., St. Louis; State Chemical Mfg. Co., Cleveland; Willetts-O'Neil Co., Washington, D. C.; joint exhibit of G-E commercial and industrial vacuum cleaners, for which all four are distributors. James Combittis of the Mann Co., in charge.

H. D. Hudson Mfg. Co., Chicago; sprayers and dusters; D. P. Lewis, secretary and J. J. Mulvaney.

R. M. Hollingshead Corp., Camden, N. J.; maintenance chemicals; Miss Wilma Gemmil, promotional sales manager, in charge; R. G. Bergquist, Chas. Kenney, Kurt Friday.

Herz Mfg. Corp., New York City; cups and straws; L. M. Richard, promotional sales manager, Henry Holsten.

Dreuding Bros. Co., Philadelphia, chamois; J. B. Fitzpatrick.

Howard Dustless Duster Co., Boston, Mass.; dusters, J. Stillbach, president, C. R. Patterson, Chicago.

Arcade Industries, Chicago, mopsticks, represented by Howard Dustless Duster Co.

Greenview Mfg. Co., Chicago; window cleaners; Herman Siemund, Alf. W. Switter.

Pacific Coast Brush Co., Los Angeles, and Flour City Brush Co., Minneapolis, brushes for commercial and industrial use; Robert C. Olson.

Warren Haviland Co., St. Louis; squeegees. Warren Haviland.

Ex-Cell Products, Chicago, sand urns; Roy E. Gale.

Holt Mfg. Co., Oakland, Calif., and Newark, N. J.; Floor machines; W. E. Holt, president; H. R. Witterwood, vice-president, Calif.; S. J. Clarick, vice-president, New Jersey; A. L. Thorsen, L. W. Morris.

Colgate-Palmolive-Peet Co., Jersey City, N. J.; soaps and synthetic detergents. R. O. Trowbridge, manager, industrial dept.; R. W. Boedecker, J. M. Geist, J. O'Brien.

Golden Star Polish Mfg.. Co, Kansas City, Mo.; dust mops, waxes; furniture polish, paint and varnish remover; Lee Gradinger, pres.; Earl T. Asel.

Piezo Mfg. Corp., New York; power atomizers and insecticidal sprayers. David R. Ligh, W. F. Weber.

E. F. Drew & Co., New York; maintenance materials; F. H. Guernsey, W. E. Morgan.

S. C. Lawlor Co., Chicago; floor scrubbing, waxing, polishing machines; Arthur P. Boller.

Light Buoy Industries, Brooklyn; mops; A. J. Lipstock.

Lincoln-Schlueter Floor Machinery Co., Chicago; floor maintenance machines; L. C. Johnson.

Majestic Can Corp., Brooklyn; ash cans; Irving Seltzer, president; Eli Beneson.

Art Beck Co., Chicago, "Baitu" raticide, V. B. Nyhan, John Van Kervis, Dan Foran, Bob Tangney.

Lily Tulip Cup Corp., New York; paper cups and containers; Scott Bates, Frank Roche, Robt. C. Snyder.

Schaeffer Bros. and Powell Mfg. Co., St. Louis, liquid soaps and waxes. Tom Shields, John Derrick.

A. Laitner & Sons, Detroit, brushes; Wm. Laitner, Carter Laitner.

Mayfair Industries, Inc., Chicago; aerosol gun and concentrate; Ray A. Chodd, Walter Colby.

Perfection Mop Co., Maywood, Calif.; dust mops; Ed Ferris, vice-pres.; Thos. F. Shuey, Wayne L. Rogers.

Precision Metal Specialties Co., Philadelphia, floor and window squeegees; S. A. Berger.

Windsor Wax Co., Hoboken, N. J.; waxes, Jacob Kahn.

Breuer Electric Mfg. Co., Chicago; vacuum cleaners, floor maintenance machines, portable electric blowers, L. C. Miles, sales manager; G. W. Breuer; C. C. Erlandson, A. M. Anderson.

Acme Sponge & Chamois Co., Inc., Long Island City, N. Y.; sponges and chamois; Robt. A. Geddes, vice-president.

Allen B. Wrisley Co., Chicago; soaps, Mildred Nelson, Roy Wilson.

Atlantic Stamping Co., Rochester, N. Y.; mopping equipment; C. J. Dygert.

American Dispenser Co., New York; soap dispensers; M. B. Feinson, president; W. J. Dobkin, vice-president.

Buffalo Fire Appliance Co., Dayton, O.; fire extinguishers; Theo. G. Metz, Byron O'Hara.

Palmer Fixture Co., Waukesha, Wis.; soap dispensers, toilet and towel fixtures, eraser cleaners; G. F. Walker, president.

Economy Mop Wringer Co., wringers and sticks; Arthur Slutsky, president; Paul Distenfield, Ann Elliott.

American Textile Products Co., Cleveland; mops; H. J. Lehmen, A. B. Riggs.

Lowell Mfg. Co., Chicago; electric and hand sprayers and dusters; V. A. Snell, C. A. Hummer, R. S. Cain.

International Metal Polish Co., Indianapolis; waxes and polishes; Ray Cornthwaite, G. J. Kiefer.

Frank Miller & Sons, Chicago, floor-sweeping compounds, George H. Breusch.

Beckley-Cardy Co., Chicago; school maintenance equipment; M. L. McCabe, Jos. Pastorek.

American Floor Surfacing Machine Co., Toledo, O.; floor maintenance machines; W. B. Crew, L. F. Steele, N. C. Botte, R. N. Forrester, Frank Dolan.

(*Turn to Page* 169)

AIR DEODORIZERS

(*From Page* 137)

(18) Dalbey, J. H. & Eddy, W. H.: (through) Soap & Sanit. Chem. 18: 109, Nov. 1942

(19) Bennett, H.: "Chemical Formulary," Vol. I, New York, Chem. Publ. Co., 1933, p. 149

(20) Goldstein, A. W.: U. S. Pat. 2,228,993, 1941

(21) Bennett, H.: "Chemical Formulary," Vol. III, New York, Chem. Publ. Co., 1936, p. 105

(22) Anon.: Seifenzeider-Ztg. 66:6, 1939

(23) Harris, J. P. & Sigworth, E. A.: Nat. Provisioner, Oct. 13, 1945, p. 13

(24) Anon.: Indust. Hygiene News Letter, Feb. 1945

(25) U. S. Pat. 2,310,099

(26) Danforth, T. F., Rudig, D. M. & Fishbein, W. I.: Mod. Hospital, May, 1946

EPIDEMIC CONTROL

(*From Page* 129)

along the cob and then the cob cut into one inch sections and distributed are particularly effective. (Richter and Emlen, 1946). The bait should have a faintly greyish appearance after dusting. The area for 6 inches around the bait should also be dusted.

Leave the baits in little shallow piles of 1 to several ounces each in small cups or on small pieces of paper in the following locations:

a. Place the poisoned baits near feeding places, especially garbage pails and food storage places, or in sheltered spots where rats can eat with being disturbed.
b. near sources of water for rats.
c. near burrow entrances and harbourage sites.
d. along runways.
e. behind boards and boxes or in specially prepared bait stations.

(*To be Concluded*)

SYNTHETIC DETERGENTS

(*From Page* 71)

"Santomerse DT" were relatively in soluble in carbon tetrachloride, acetone, and Stoddard Solvent. Dihexyl sulfo phthalate was soluble to the extent of 5.8 per cent, 38.7 per cent, and less than 0.14 per cent in the three solvents respectively, while "Santomerse DT" was soluble to the extent of 13.4, 38.7, and 41.0 per cent in the three solvents respectively. Solubility in these solvents suggests application for use in dry-cleaning liquids, insecticides, printing inks, and as self-emulsifying agents.

Jay C. Harris, A.S.T.M. Bull. No. *140*, 76-83, No. *141*, 49-53 (1946).

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TECHNICAL Briefs

From Current Literature in the Sanitary Products Field

New Insect Repellents

The insect repellent properties of hydrogenated naphthol and biphenyl derivatives against *Aedes aegypti* were studied under constant environmental conditions of 90°F. dry bulb and 80°F. wet bulb. A decrease in temperature and humidity increased the repellent effectiveness. 1,2,3,4-Tetrahydro-2-naphthol and a number of derivatives were studied. The former was shown to cause primary irritation to the skin in 6 of the 59 subjects. Most of the substituted derivatives produced no skin irritation. Mixtures of the various compounds with ethyl or benzyl alcohols extended the mosquito-repellent effectiveness. M. Pijoan, H. J. Gerjovich, M. L. Hopwood, L. A. Jachowski, and J. T. Romine. U. S. Naval Med. Bull. *46*, 1506-22 (1946).

Athlete's Foot Treatment

Investigation of fungicides for treatment of athlete's foot showed that undecylenic acid and 2,4-dinitro-*o*-cyclohexylphenol, called DN, gave the highest percentage of satisfactory clinical results. Although DN and trichlorophenol were the most effective agents in terms of time required, they were often found to be irritating. Incidence of irritation was least with undecylenic, propionic and benzoic acids. For routine treatment of subacute cases, undecylenic acid appears to be best. None of the fungicides tested was immediately effective and none was successful in all cases. The conclusion reached is that treatment of athlete's foot must be varied according to the severity of the case and the degree of sensitization and secondary infection. J. G. Hopkins et al, *J. Investig. Dermatology* 7, 239 (1946).

Refining Pyrethrum Resins

Crude pyrethrum oleoresins are extracted at −30° F. with 2-10 volumes of propane. The insoluble phase contains resinous and waxy inactive materials, while the pyrethrins remain in solution. W. E. Kuhn, to Texas Co. U. S. Patent No. 2,413,107.

Toxicity of DDT

DDT was found equal to gamma-hexachlorocyclohexane in its irreversible effect on mosquitoes, *Culex pipiens*, but lacked the quick knockdown. Pure crystalline DDT to which lice were exposed for 2 hours did not kill them. A dust made with 10 per cent DDT in talcum powder killed lice after periods of exposure from 2 hours and 4 minutes to 6 hours and 30 minutes. This material did not kill nits but did control live lice on hair.

DDT in kerosene emulsions was more toxic to experimental animals than were dusts. Wetted DDT powder produced no ill effects on rabbits even when the dust contained 15 per cent of DDT. Repeated exposures to DDT mists produced toxic symptoms in rats and guinea pigs but not in rabbits. Acute toxicity after oral administration, was determined in white mice, white rats, and dogs. The dosages were 9 grams per kilogram of body weight, 2-4 g./kg., and 100 mg./kg. respectively per day, given until severe toxic symptoms appeared. In all species, loss of appetite, diarrhea, and roughness of the hair were observed. K. Zein-el-Dine. *J. Roy. Egypt Med. Assoc. 29*, 38-54 (1946); through *Chem. Abs.*

Measuring Aerosols

A sensitive photoelectric instrument is described which can be used to measure the concentration of dilute aerosols by measurement of low light intensities. It is applicable to a wide range of uses in colloidal chemistry. F. T. Gucker, Jr., H. B. Pickard, and C. T. O'Konski, *J. Am. Chem. Soc. 69*, 429-38 (1947).

New Insecticide

A compound related to DDT but differing somewhat in structure, called Colorado 9, kills flies at the low spray level of 0.1 cc. of five per cent petroleum solution per cubic meter of air space. The flies lose their motor ability after 10 minutes and die within an hour. G. M. List and M. G. Payne. *Science 105*, 183 (1947).

Pyrethrin Determination

A method is described for the determination of pyrethrin I in pyrethrum concentrates in light and heavy mineral oils. The method utilizes the separation of chrysanthemum monocarboxylic acid and the reduction of Deniges' reagent. Modifications of the Wilcoxon-Holaday method concerned with the initial removal of uncombined acids, the removal of the oil and the separation of the monocarboxylic acid have been introduced. The determination of the monocarboxylic acid by the reduction of Deniges' reagent gives results for pyrethrin I slightly in excess of those given by a modified Seil method involving separation of the monocarboxylic acid by steam distillation.

Pyrethrin II may be determined in oil solutions made from petroleum ether extracts of pyrethrum flowers by an application of the Seil method. Further work is required on the determination of pyrethrin II in oil

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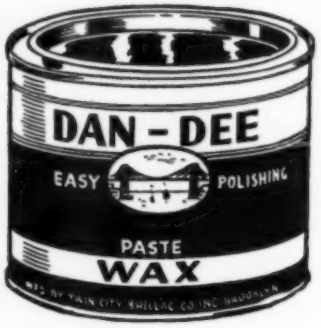

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solutions made from acetone extracts of the flowers. J. T. Martin and S. F. P. Brightwell. J. Soc. Chem. Ind. *65*, 379-82 (1946).

DDT Spray in Puerto Rico

In the Fall of 1944, the U. S. Public Health Service, in cooperation with the Insular Health Department and the School of Tropical Medicine, inaugurated a residual DDT spray project to determine whether this new method of malaria control might be of practical value in Puerto Rico. There the important vector (*Anopheles albimanus*) is a "wild" mosquito which feeds on humans during twilight or at night. One village was used as a control, while another of similar size was sprayed with DDT three times during the year.

A marked reduction in malaria in the DDT-treated village, as contrasted with the one not treated, indicates that DDT may be an effective weapon against malaria in the areas where the vector mosquito is of this variety. Further experience will be necessary before its effectiveness under other conditions and against species with similar habits can be evaluated.

In addition to reducing malaria, residual DDT spraying may play an important part in preventing the transmission of other insect-borne diseases of the Island, such as filariasis and dengue, and other diseases such as typhoid fever, diarrhea, and dysentery in which flies may play a vector role. Moreover, residual DDT spraying is effective in controlling such common household pests as bedbugs and cockroaches for several weeks or months. P. A. Stephens and H. D. Pratt. *Science 105*, 32-3 (1947).

Time Rate of Toxicity

In laboratory tests with 4th instar larvae of mosquitoes (*Aedes vexans* and *A. lateralis*), considerable variation was found in the time required to obtained a lethal dose of an insecticide. Larvae exposed to pyrethrum emulsion obtained a toxic dose in less time than those exposed to a petroleum oil emulsion or to unemulsified petroleum oil. DDT is slightly slower in action than some common insecticides such as pyrethrum emulsion and petroleum oils. Liquid preparations required longer exposures than dust preparations. Considering the small amounts of DDT used, and the resultant wide spacing of the particles, the larvicidal effect after a few hours' exposure is remarkable W. W. Yates. J. *Econ. Entomol, 39*, 468-71 (1946).

Aerosol Device

The device for producing aerosols is a pressure vessel and nozzle to contain a solution of nonvolatile parasiticide dissolved in a gas under pressure. L .D. Goodhue, to the Secretary of Agriculture. U.S. Patent No. 2,412,728.

DDT Toxicity Studied

The following functions were determined for a series of derivatives of DDT: Insecticide power, toxicity in mice, capacity to liberate hydrogen chloride, solubility in acetone and in olive oil. The acids *p,o'*-dichlorodiphenyl acetic and *p,p'*-dimethyl diphenyl acetic, are noticeably more toxic than the corresponding trichloroethyl derivatives. Of all the substances tested, *p,p'*-difluorodiphenyl trichloroethane—a good insecticide—and*p,p'*-ditetralyltrichloroethane – not an insecticide – have toxicity equal to that of DDT.

Insecticidal power is not related to the chlorobenzene radical, and the trichloroethyl radical does not condition the lipoid solubility of the molecule. Toxicity of the compounds to mice is not a function of the lipoid solubility. The capacity to liberate hydrogen chloride corresponds, in some cases, to insecticidal power. However, this does not explain the behavior of other effective compounds which cannot liberate hydrogen chloride. R. Domenjoz. *Helv. Chim. Acta 29*, 1317-22 (1946); through *Chem. Abs.*

Insect Repellent

An insect repellent composition comprises an inert diluent and an active ingredient containing dibutyl *di*-malate. The diluent contains a vegetable oil. P. Granett, to Can. Natl. Carbon Co., Ltd. Canadian Patent No. 438,210.

Red Squill Assay

A simplified bioassay for red squill on a voluntary feeding basis has been described. By this method it was found that the ratio of the LD_{50} of male to the LD_{50} of female white rats is a constant for a single strain of rats and that the slopes of the dosage-mortality curves are parallel. Bioassay can therefore be conducted with the use of both sexes of rats if this constant is determined and taken into account.

The toxic effects of red squill varied with the weight range of the rats (100-350 grams), the greatest variation and lowest LD_{50} occurring with the largest rats. This indicates that rats for bioassay should be of a selected narrow weight range of young small rats. The differences in the LD_{50}'s of the same sample as determined in two different laboratories are great. Before a comparison of bioassay results of different laboratories is possible, a standard of reference must be made available. J. L. Radomski and G. Woodard. *J. Am. Pharm. Assoc., Sci. Ed. 35*, 289-95 (1946).

Fly Control with DDT

Traps and care in disposal of wastes were relied on chiefly to reduce the number of flies. DDT was effective for adult flies, but it was not very effective for the treatment of substances infested with fly maggots. F. R. Shaw and A. I. Bourne. *J. Econ. Entomol. 39*, 543-4 (1946).

Crystal Size of DDT

The toxicity of DDT to *Tribolium castaneum* (red flour beetle) was directly proportional to the length of the crystal with the range from colloidal to needle-like crystals 350 microns long, the largest size studied. The breadth of a crystal was less clearly associated with toxicity than length, but increasing the breadth of crystals from needle to plate decreased toxicity somewhat. A. H. McIntosh. *Nature 158*, 417 (1946).

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N.A.I.D.M. Meets June 9-11

PROGRAM for the 33rd annual-mid-year meeting of the National Association of Insecticide & Disinfectant Manufacturers to be held June 9, 10, and 11 at the Edgewater Beach Hotel, Chicago, has been announced by John Powell of John Powell & Co., New York, chairman of the program committee. Business sessions will be held all day on Monday, June 9, and in the morning only on Tuesday and Wednesday, June 10 and 11. Sunday afternoon, June 8, and Tuesday afternoon, June 10, will be given over to committee meetings. Group luncheons will be served June 9 and 10. An informal dinner and floor show will be presented Tuesday evening, June 10. Entertainment will be in charge of a committee headed by L. P. Killilea of Hercules Powder Co., Chicago. The program follows:

Monday, June 9
Morning Session

Registration—9:00 A.M.
Address of President—N. J. Gothard, Sinclair Refining Co., Chicago.
Report of Secretary—H. W. Hamilton, Koppers Co., White Tar Div., Kearny N. J.
"Current Legislation"—W. J. Zick, B. Heller & Co., Chicago, Chairman Legislative Committee and John Conner, General Counsel, NAIDM.
"Talking Business"—Alvin H. Berndt, City National Bank, Chicago.
"A Fly Control Program"—Dr. Harold Gunderson, Extension Entomologist, State of Iowa.
"Disinfectants,—A Symposium on the Current Situation"—Leader: L. J. Oppenheimer, West Disinfecting Co., New York.

Monday, June 9
Afternoon Session

"Insecticide Scientific Developments" —A Report by Dr. Alfred Weed, John Powell & Co., Chairman, Insecticide Scientific Committee.
"What's Ahead in Insecticides "—Dr. S. A. Rohwer, Bureau of Entomology & Plant Quarantine, U. S. D. A.
"DDT Residues—A Study of Their Effects on Various Types of Surfaces and Materials"—H. A. U. Munro,, Canadian Department of Agriculture.
"Testing Residual Sprays—A Review of Proposed Methods"—Dr. M. H. Doner, J. R .Watkins Company.
"Technical and Commercial Aspects of 2,4-D"—Dr. L. W. Kephart, in Charge of Weed Investigations, U. S. D. A.

Tuesday, June 10
Morning Session

"Insecticide Raw Materials"—A Symposium Led by J. A. Jenemann, E. I. du Pont de Nemours & Co.
"A New Mothproofing Larvacide"—Dr. Nicholas M. Molnar, Fine Organics Inc.
"Triethylene Glycol in Sterilization"—L. D. Polderman, Carbide & Carbon Chemicals Corp.
"Problems Facing the Household Insecticide Industry"—A. W. Miller, Gulf Research & Development Co.

Wednesday, June 11
Morning Session

"Disinfectant Developments"—A Report of the Disinfectant Scientific Committee by J. C. Varley, Baird & McGuire, Inc., St. Louis, Chairman of Disinfectant Scientific Committee.
"A Symposium on Floor Waxes"—Led by M. L. Magee, T. F. Washburn Co., Chicago, Illinois.
"Newer Synthetic Insecticides"—E. F. Knipling, Bureau of Entomology & Plant Quarantine, U. S. D. A.
"The Container Outlook"—A Symposium Led by T. E. Alwyn, American Can Company.
"Air Force Incendiary Bombing (A Film)—Brig. Gen. E. Montgomery, Air Chemical Officer, A.A.F.

AIFA Meets at Rye

The mid-year meeting of the Agricultural Insecticide and Fungicide Association was held April 23, 24 and 25 at the Westchester Country Club, Rye New York. Highlights of the program included reports of the technical and legislative committees, an address on new application equipment for sprays and dusts, and a round-table discussion of use, toxicity and nomenclature of recently discovered insecticide toxicants. The discussion, led by S. A. Rohwer of the B.E.P.Q., Washington, featured talks by Dr. F. P. Cullinan, assistant chief, Bureau of Plant Industry, and Dr. A. J. Lehman, chief of the division of Pharmacology, Food and Drug Adm. Dr. Cullinan described tests of new materials as regards toxicity to plants, the problem of residues, and their cumulative effect in the soil. He stated that variations exist between heavy and light soils, and that temperature and moisture have a bearing on residue in soil. Dr. Lehman went into detail on toxicity tests made thus far on DDT, DDD, DMDT, benzene hexachloride, Chlordane, "Toxaphene" and hexaethyl tetraphosphate. He said that the lethal dose for DDT averages about 500 mg./kg. for animals, and compared other insecticides to this. "Toxaphene" and the gamma isomer of DDT were described as being 4 times as toxic as DDT itself. Chlordane was found to equal DDT in toxicity. DDD and DMDT were described as much less toxic than DDT,—toxicity ratings respectively being 1/20 and 1/35 the toxicity of DDT.

New Toxaphene Booklet

"Toxaphene," a new insecticide manufactured by Hercules Powder Co., Wilmington, Del., is the subject of a technical bulletin recently published by the University of Delaware.

The new 1947 model electric-steam vaporizer manufactured by Hydro-Mist Corp., Glendale, Calif., is known as the "Commander." The machine is streamlined and light weight. All parts are aluminum except the chemical container which is of brass. There are triple safety devices in the time clock, thermostat, and safety valves. The enlarged chemical container now holds 44 oz. and may be filled twice to one filling of water in the pressure chamber (water tank). The nozzle has been improved to give greater efficiency of operation and a specially designed control valve at the side of the cabinet gives full variation of condensation from fine spray to heavy fog. An 8 oz. size Hydro-mist "Scout" will soon be marketed.

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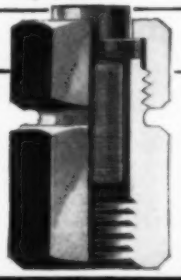

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TRADE NEWS . . .

Glasby—Fuld Gen. Mgr.

Ward M. Glasby, who for 17 years was connected with Churchill Mfg. Co. of Galesburg, Ill., joined Fuld Brothers, Baltimore, April 1st. Mr. Glasby will act as general manager of the company, assisting Melvin Fuld and Joseph Fuld, partners in the company, in directing the firm's future operations.

Lester Labs Open

The opening of the Lester Laboratories and plant at East Point near Atlanta, Ga., was recently announced by the company. The firm is manufacturing soaps, insecticides, disinfectants, specialty cleaners, and offers a complete line of sanitary supplies to the institutional and industrial consumer. The organization is headed by Lester A. Friedman, Jr., formerly of the research and development department, Office of Rubber Reserve, Washington, D. C. The company claims that from its advantageous geographical location 97 per cent of the population of the southeast can be served within 24 hours.

New Firm in Richmond

American Chemical Co., wholesale distributors of sanitary chemicals and janitor supplies announced its opening in Richmond on the first of May. The company will be distributors for polishes, cleaners, soaps, insecticides, sweeping compounds, sprays, and various types of sanitary chemicals and janitor supplies.

USDA Appoints Haller

Dr. H. R. Haller was recently appointed special assistant to Dr. P. N. Annand, Chief of the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture. He has served since 1937 as assistant leader of the Bureau's division of insecticide investigations. Dr. Haller, a graduate of Cincinnati and Columbia Universities, left the Rockefeller Institute for Medical Research in 1929 to join USDA. His work in connection with the determination of the chemical structure of rotenone, in collaboration with Dr. L. B. LaForge

DR. H. R. HALLER

and L. E. Smith, earned for him and for Dr. LaForge the Hillebrand prize of the Washington Chemical Society for 1932. Dr. Haller's new assignment covers the various chemical aspects of the Bureau's problems involving the development, manufacture and use of the chemical insecticides. In addition, he will maintain relationships of the Bureau with manufacturers of chemicals which may have insecticidal properties.

Sprayer Corp. Moves

Headquarters of Sprayer Corp. of America, Chicago manufacturer of electric sprayers motorized for compression and fan type spraying, were recently moved to 1712 Payne Street, Evanston, Ill.

DDT in Wall Paper

Two new printed DDT-treated, wall papers for children's rooms are now on the market. Made by Trimz Co., Inc., division of United Wall Paper, Inc., Chicago, the ready-pasted, multi-colored wall papers contain 5 per cent DDT. In laboratory tests, flies, moths, and mosquitoes released in a room covered with this wall paper died within 24 hours, according to the manufacturers, and a slightly lower death rate was recorded for silver fish. The DDT wall paper is extremely effective against bedbugs, the report said. Washing and the accumulation of dust and dirt do not interfere with the insect-killing properties which are guaranteed for one year.

West Markets "Vapomat"

The "West Vapomat," an automatic electric insecticide sprayer, was recently announced by West Disinfecting Co., Long Island City, N. Y. One filling of the "West Vapomat" with "Vaposector Fluid" is claimed by the company to produce sufficient spray to kill insects in an area of 500,000 cubic feet. The "Vapomat" is housed in a silver colored aluminum case, reducing weight to approximately 8 lbs. A dial control regulates volume of dispersal. The electric cord is made of "Neoprene" and is oil resistant. West "Vaposector Fluid" is a concentrated insecticide formulated for electric sprayers and atomizers and has been developed in several formula variations to meet the specific needs of various control problems.

Celotex Agt. for Ceraseal

Ceraseal Chemical Corp. and Celotex Corp., both of Chicago, have entered into an agreement whereby Celotex will become sales representative for Ceraseal products throughout the world, except in continental United States. Ceraseal manufactures fungicides and other chemicals, for protecting wood, masonry, leather and textiles from termites, moisture, fungus and other destructive elements.

Pennsalt Names Drake

William P. Drake, manager of sales of the special chemicals division of the Pennsylvania Salt Manufacturing Co., Philadelphia, has been appointed assistant vice-president. His appointment was effective May 1st. Mr. Drake joined Pennsalt in 1934. In 1939, he was made manager of sales of the Pennsalt cleaners division and, in January 1943, he became manager of sales of the special chemicals division.

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Aerosol Plant in South

The establishment in New Orleans of a new plant for W. R. Grace & Co. was recently announced by Karl A. Kaschewski, manager of the company. The new plant will manufacture an aerosol insecticide and was expected to be in operation some time in April. The plant is said to be the first of its type in the south and will manufacture the "Naco Buzz Bomb."

Electric Moth Sprayer

Lowell Mfg. Co., Chicago is now manufacturing the Lowell "Thoro-Spray" electric moth sprayer for home use. To operate, a "hypodermic needle" is inserted into upholstery and the spray is released into the stuffed section. An adjustable nozzle permits varying the spray for garments, rugs and furniture. Power is provided from a small electric motor suspended by a strap from the operator's shoulder.

Meinhardt Co. Expands

J. A. Meinhardt Co., Chicago soap, mop, and chemical specialty manufacturers recently released further details on their program of expansion. In the company's new main building paradichlorobenzene blocks will be made and wrapped. Re-rolling and packing equipment for soap flakes will also be installed in this building. In Bldg. No. 2 the company intends to produce paradichlorobenzene, and a third building will house the wash and locker rooms. There will be two tubular boilers in the new installation, one 175 h.p. and one 250 h.p. Another building will house the machine shop. The company intends to install 6 chlorinators capable of producing 3,300 lbs. of paradichlorobenzene each per 12-hour cycle.

NAIDM Elects Members

The National Association of Insecticide and Disinfectant Mfrs., Inc., New York, announced in April the following firms have been elected to membership: Active—Baird & McGuire (Canada) Ltd., L. A. Forsyth, manager, Lachine, Quebec, Canada; Masury Young Co., Charlestown, Mass., Lester C. Conner, chief chemist; Sherwin Williams Co. of Canada, Ltd., A. H. Carter, general manager, Montreal, Canada. Elected to associate membership were Atlas Powder Co., Wilmington, M. J. Creighton, vice-president; Continental Filling Corp., Danville, Ill., C. F. Carter, president.

New Chi. Plant for West

West Disinfecting Co. expects to move all Chicago operations about Sept. 15, from present quarters at 2635 Cottage Grove Ave., to a new plant now under construction at 4756 S. Kedzie Ave. The modern, re-enforced concrete, fireproof structure will be two stories in height with total area of approximately 42,000 sq. ft. Thus, according to G. A. Suerki, Chicago superintendent for the company, more efficient and economical operations will be possible in the new quarters in the handling of mid-west territory business, covering the states of Illinois, Indiana, Wisconsin and Iowa. Construction is being underwritten by the Central Manufacturing District, which has announced that the cost of the new building will be around $300,000.

New Wax Applicator

Everett E. Young Co., West Bridgewater, Mass., has announced a new automatic wax dispenser for use in polishing floors, which is described as having a hollow aluminum handle filled with liquid wax. By pressing a button on top of the handle, the wax is released in controlled quantities to flow into a wool applicator pad.

"Omnicide" Liq. Insecticide

Superior Products Co., 47 N. 2nd St., Philadelphia 6, Pa., is distributing a leaflet describing the action of their product, "Omnicide," a highly concentrated liquid insecticide for insects, nits and larvae.

New Mothicide

Fine Organics, Inc., New York, has just announced a new mothicide, "Polychlor-C-1940," designed to supplement or replace paradichlorobenzene. When properly compounded, the new product is said to be as effective and in some cases more effective than para. It also acts as a synergist for either para or naphthalene. Used with 50 per cent para it is claimed to produce a mothicide equal in strength to pure para. Added to 20 per cent naphthlene it is said to produce a superior mothicide which lasts longer than para. The odor is reported to be good.

McCormick & Schilling Join

A merging of the interests of McCormick & Co., Baltimore and A. Schilling & Co., San Francisco was announced in April. The west coast division will be operated locally and the entire office, factory and sales personnel is being retained.

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Insecticide Bills Now Law

In the past weeks several bulletins from the National Association of Insecticide and Disinfectant Manufacturers, New York, have reported the passing of insecticide bills in a number of states and have quoted the full text of the bills in most cases. In the following states bills have been passed that were quite in line with the provisions of the proposed uniform state bill: Montana, Arkansas, North Dakota, South Dakota, Vermont, New York, Oregon (where the legislation consisted of a satisfactory amendment of the existing law). In Kansas and North Carolina the new state laws included some undesirable features,—Kansas asking $15 for each product registered and North Carolina getting $10 per product but reducing the fee to $5 per product after a total of $250 is collected in fees. The new North Carolina law is also objectionable to the industry in that it requires full disclosure of formula on the label.

There is a possibility of the passage of six other bills in the next few weeks: in Iowa, Massachusetts, Colorado, South Carolina, Oklahoma, and Rhode Island. None of these appears to have objectionable features. A number of other bills which were felt to be undesirable are now dead, the NAIDM reports. These are: Delaware Senate Bills 76, 77, and 80; Georgia House bill 455; Oregon Senate bill 23; Utah House bill 162; West Virginia Senate bill 258 and House bill 341; Indiana Senate bill 180; and New Mexico Senate bill 241.

Six Join Aromatics Sales

Six former servicemen have been appointed as additional representatives to serve in the eastern and midwestern territories of Aromatic Products, Inc., New York, the Company announced recently. George R. Wood has been appointed branch manager for the midwestern territory. He has worked with the Chicago office for over a year. Mr. Wood will be assisted by Vernon K. Galitz who will serve northside Chicago as well as northern Illinois and Wisconsin. Walter T. Badcock joins the firm after four years of Naval service and will handle accounts in New York City and New Jersey. Louis A. Romani expands his activities to cover accounts in upper New York State and the Metropolitan area. The newly appointed service representative for the New England territory, which includes Connecticut, Rhode Island and Massachusetts, is Robert L. Williams. Donald H. Bush joins Aromatic Products as representative for eastern Pennsylvania, Maryland and the District of Columbia.

The cuttings or plants of Derris, being grown by the Vegetable Crops Laboratory of the Florida State Agriculture Department probably originally came from Java. The cuttings were planted late last fall and in spite of early difficulties are doing very well. About one-half acre is being grown by Dr. E. G. Kelsheimer of the Bradenton station. Difficulties encountered were insect infestation, extremely warm December and January weather followed by heavy freezes in February, which defoliated the plants. New leaves are now sprouting, however, and half of the plants are being grown in clean cultivated rows and half among a cover crop which somewhat simulates the natural conditions.

Derris Planting at East Bradenton, Florida

New Akar Mop

A mop of unique design was recently placed on the market by Akar Kass-Harr Co., Chicago. The new model 11 "Akar Kleaner" consists of a 48 inch handle to which has been attached a flexible coiled spring which in turn accepts a double-sided textile head which is readily removable, washable and replaceable. The spring is said to conform to any surface to which it is applied—exerting a constantly even pressure comparable to that of the hand. The new product will be distributed by leading mill supply, janitor supply, hotel, restaurant and institutional supply houses.

Object to Michigan Bill

As we go to press, the introduction of two identical insecticide bills in Michigan is reported. The new proposed bills, House Bill 450 and Senate Bill 300. According to the National Association of Manufacturers, the bills deviate from the uniform state model bill with three objectionable features: 1. No alternate labeling provision. 2. Fee, $15 per product, no limit. 3. No provision for registration under protest. The bill does have a clause providing that registration can either be denied or cancelled. Appeals can be made only to the state chemist, entomologist, and president of the Insecticide & Fungicide Association.

Introduce "Nil" Deodorant

Skinner Mfg. Co., drug div., Omaha, Nebr., has been using full page advertisements in Chicago newspapers to introduce "Nil," a new odorless deodorant spray.

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- **Periodical Bulletin on new equipment and supplies.**
- **Everything you need from one source of supply.**
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To Amend Federal Insecticide Bill

THE Andresen bill to regulate interstate shipments of insecticides, fungicides, and weed killers moved a step closer to approval in mid-April when representatives of the trade and spokesmen for the Department of Agriculture met and agreed upon a number of amendments. The bill, HR 1237, now being considered by a subcommittee of the House Agriculture Committee, is designed to replace the present Insecticide Law of 1910, and was presented in full on page 133 of February *Soap and Sanitary Chemicals*.

The following amendments were agreed upon at the recent meeting by members of the NAIDM, the AIFA and the IMA:

(1) On page 2, line 6, after the word "fungi" *delete* "or weeds."

(2) On page 7, line 2, after the word "purchase" change the semicolon to a colon and *add* "provided, that the Secretary may permit the ingredient statement to appear prominently on some other parts of the container if the size or form of the container makes it impractical to place it on the part of the container which is presented or displayed under customary conditions of purchase."

(3) On page 8, line 4, after the second "deliver" *add* the following—"in the original unbroken package."

(4) On page 9, line 16, after the word "as" *delete* "a."

(5) On page 14, following line 13, *add a new paragraph as follows*—"(e) The Secretary is authorized to cancel the registration of any economic poison at the end of a period of five years following the registration of such economic poison or at the end of each five year period thereafter unless the registrant prior to the expiration of each such five-year period requests in accordance with the regulations issued by the Secretary that such registration be continued in effect."

(6) On page 15, line 15, after the word "Act" *delete* the period and *add the following* "and the determination and establishment of suitable names to be used in the ingredient statement."

(7) On Page 18, line 23, after "$1000" *add* "or imprisonment for not more than one year or both such fine and imprisonment."

(8) On Page 24, line 4, after the word "official" *add* "Agricultural or other."

The industry leveled criticism at a proposed amendment requiring periodic renewal of registration with the Department of Agriculture for all economic poisons, and suggested an alternate amendment requiring manufacturers to report every five years as to whether or not their registered products are still on the market. If a product is no longer being sold, or if the maker fails to report, USDA may automatically terminate registration. Manufacturers also criticized a proposal to include advertising under the labeling provisions of the bill, maintaining that people follow directions for use as printed on the container's label or accompanying literature and not instructions in advertising copy. Some witnesses requested that the ingredient statement be changed to require full formula disclosure. It is believed, however, that the amendments listed above are the only ones that will be adopted by the committee.

—— ♦ ——

Study Domestic Wax Sources

Continued study of the possibilities of producing wax from domestic vegetable sources was recommended to farmers, scientists and industrialists gathered at Oklahoma City, Okla., in March for the 12th annual meeting of the National Farm Chemurgic Council, the speaker being J. Vernon Steinle, research and development director of S. C. Johnson & Son, Inc., Racine, Wis. Viewing world production of vegetable waxes, Mr. Steinle pointed out that, while the greatest tonnages are produced outside this country, approximately 80 per cent of the supplies are used within the United States.

"This fact," he declared, "together with the increasing demand, should stimulate agricultural ventures toward production of new vegetable waxes in this country. For some years, he said, various governmental and agricultural agencies have made progress in studies toward the goal of producing new waxes from domestic vegetable sources. Definite progress, he stated has been made in production of wax from cotton fiber, the "jojoba" plant and sugar cane. On the basis of experiments with the latter, he said, it has been estimated that the Louisiana sugar cane crop would produce about 25,000 tons of crude wax, this being in excess of the annual production of carnauba wax and equal to the annual imports into the United States of all vegetable waxes.

For over a year, he revealed, the Cuban-American Sugar Co. and S. C. Johnson & Son, Inc., have been producing crude sugar cane wax in Cuba and a refinery is being built in Louisiana for production of the refined wax. Vegetable waxes, he said, are universal in the plant kingdom and satisfactory commercial waxes may be obtained from various types of agricultural crops. The economics of such production, he added, depend upon the value to be placed on the particular plant, amount or percentage of wax to be found in the particular species of wax, and the ease with which the wax can be recovered. "The production of wax," he concluded, "should be particularly interesting to the agriculturist since most wax producing plants produce their best on marginal and arid lands."

—— ♦ ——

Collins Joins Amecco

J. Gordon Collins has been named vice-president and general sales manager of Amecco Chemicals Corp., New York City, manufacturers of industrial chemicals, it was announced in mid-April. Mr. Collins was formerly associated with the chemical division of the U. S. Rubber Co., as sales manager.

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Carbide Moves L. A. Office

Carbide and Carbon Chemicals Corp., New York, has moved its Los Angeles district office to No. 416 West 8th Street. Alfred C. Ross is district manager in charge of the Los Angeles office.

—— ♦ ——

Offer "Rodust" Raticide

Government Chemical Products Co., 2000 W. 14th St., Cleveland 13, Ohio, has announced the availability of a new raticide, "Rodust," developed for use during the war.

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Fly Control Campaigns

A CAMPAIGN is now in full swing that promises to go a long way toward reducing the fly nuisance in the state of Iowa—and incidentally to sell a substantial quantity of insecticide. Spurred by the success of last season's initial fly control program, proved in six Iowa towns and on hundreds of Iowa farms, everyone is more enthusiastic this year and cooperation is found much easier to obtain.

The idea of a fly control program did not originate in Iowa. During 1945 and 1946, several communities instituted fly control to halt the spread of polio, San Antonio, Texas, being an outstanding example. The state of Idaho also pioneered an extremely successful program last year, and other statewide campaigns are reported developing this year in Missouri, New York, Pennsylvania, Mississippi and Arkansas.

The control program being carried out this year in Iowa, is typical of such campaigns and offers a good guide for use in other localities. The program is sponsored by the county farm bureaus and was guided and aided by the Iowa State College Agricultural Extension Service. Because getting an early start, before the flies have a chance to breed and multiply, is half the battle, the program emphasized the importance of early organization and the setting up of control machinery during the winter months. Actual control is based on the application of DDT to fly-breeding places, the proper disposal of waste, and the cleaning up of breeding spots around places of business, the home and farm.

In organizing to promote such a campaign as mentioned above, the most active group in a community should take the lead. A progressive service club or a group such as the local health or parent-teachers association are logical leaders. Representatives of local farm and 4-H organizations should also be included. The county extension director is a logical man to take the initiative in organizing the rural campaign and may act in an advisory capacity to urban groups.

There are six main functions that must be assigned to definite groups to make a fly control program work. Each should have a committee.

1. **Distributing Information.** (Chairman: local newspaper editor.)
   This committee assigns publicity duties to all civic, service, social, and farm groups and is aided by the agricultural extension service.
2. **Sanitation.** (Chairman: local health officer.)
   The duties of this committee are of an examination and appraisal nature.
3. **Financial Support.** (Chairman: secretary, local chamber of commerce or local banker.)
   The organization of this committee will depend on the methods used to obtain financial support. The burden should be spread among all members of the community.
4. **Locating, Repairing, and Distributing Equipment and Materials.** (Chairman: local machine shop operator or local druggist.)
   Youth groups such as Boy Scouts and 4-H clubs should be used to help this committee.
5. **Directing Actual Control Work.** (Chairman: doctor, veterinarian, druggist, police chief, fire chief, or high school teacher.)
   This committee is in charge of the spraying program, including the setting up of administration to contact establishments, set spraying dates and outline things to be done ahead of spraying assignments.
6. **Measuring Results.** (Chairman: local health officer.)
   Experience has shown that this committee will have little difficulty in evaluating the overall results of a fly control campaign. In the few cases where the DDT apparently fails, the chairman of committee 5 and committee 6 should investigate. Causes for failure of DDT application are: a) Too light an application. b) Improper mixture. c) Application on whitewash or oil paint less than a month old. The minimum length of effectiveness of DDT application under the conditions of last year's Ames program was two months and the maximum, more than four months. It may be necessary to make a second application of DDT in 25 per cent of the establishments sprayed.

A campaign calendar should be set up. In the latter part of January, the leaders of the community service groups must be sold on the program. A first conference is held to assign responsibilities for contacting service groups. In January and February, most of the selling and publicity should be under way, county committees should be appointed which are in turn responsible for appointing local committees. During February, March, and April, urban and rural sub-committees should be set up responsible for each phase of the program. The educational program should be started, equipment located and repaired, money obtained, needs determined and materials ordered. May is the time for training urban spray crews. Specialist help should be available. Rural training schools should be conducted for school district cooperators, local clean-up drives held, rural equipment pools and exchanges set up. June is the month for DDT application. The first check on results in rural and urban areas should be made in July. In September, a final check of the results should be made.

The control procedure should include a clean up of fly breeding places and a check up on adequate garbage disposal by burning or burying. Frequent garbage removal should be insisted upon. Fly breeding places should be treated with DDT every 10 to 14 days. The interiors of all food-handling establishments should be sprayed once or twice during the summer with 5 per cent DDT emulsion. Garbage cans and walls behind them, alleys, stockyards and dumps should be sprayed every 10 to 14 days with 2½ per cent DDT suspension.

For spraying inside walls of food-handling establishments, a DDT concentrate in xylene is recommended. This spray will not stain or spot surfaces. One part of 25 per cent DDT in xylene mixed with 4 parts of water should be applied at the rate of 1 gallon per 1,000 square feet of surface. For general outside use, mix 2 pounds 50 per cent DDT wettable powder in 5 gallons of water and apply 1 gallon to each 1,000 square feet of surface. Sunlight breaks down DDT so applications should be repeated every 10 to 14 days throughout the fly breeding season. On the average wall or ceiling, one gallon of spray per 1,000 square feet will wet the surface without runoff. On very rough surfaces, more than this may be needed.

A power sprayer with a 50-gallon tank and 150 feet of hose is most effective for urban applications. Pressure sprayers of 3½ gallon capacity, barrel sprayers or even bucket sprayers can be used quite effectively. They all should have adequate lengths of hose, extension rods, positive cut-offs, and flat nozzles.

One gallon of 25 per cent DDT-xylene concentrate will cover 5,000 square feet of surface once. Four pounds of 50 per cent DDT wettable

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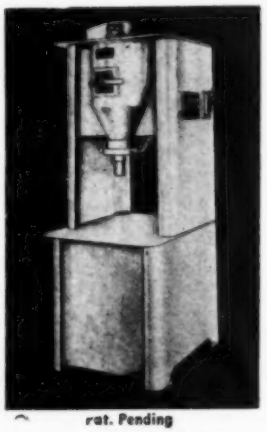

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powder in 20 gallons of water is sufficient for one spraying of garbage cans and the area around them. In Ames, a city of 25,000 population, they used 75 gallons of 25 per cent DDT-xylene concentrate and 320 pounds of 50 per cent DDT wettable powder during the summer of 1946.

After the first cleanup campaign, flies disappeared in food-handling establishments, business houses, and homes. Many grocery stores didn't even bother to put on screens. Such a program is well worth the effort used and the price of the materials expended.

N.S.S.A. CONVENTION

(*From Page* 151)

O'Brien Mfg. Co., Chicago; sink and waste pipe cleaners.

Peck's Products Co., St. Louis; soaps, detergents, dish washing compounds, disinfectants, waxes, etc.; A. J. Peck, president; L. W. Peck, Leo G. Peck, C. A. Golding.

Permo Products Co., Kansas City, Mo.; insecticides, raticides, deodorants, mothproofing compounds; Oscar S. Schaffer.

Hild Floor Machine Co., Chicago; carpet cleaners and floor maintenance machines. Fred C. Hild, Roy J. Hild, Mrs. Fred J. Hild.

Haag Laboratories, Inc., Blue Island, Ill.; liquid soaps and soap specialties; Vernon W. Haag, president; Ralph F. Haag.

Essential Chemical Co., Milwaukee; soaps; Edward J. Redmond, Stanley J. Holuba, Norman Lemke, Harry Raymond, Theo. Johnson, James H. Wheeler, Jr., James H. Wheeler, Sr.

T. F. Washburn Co. Chicago, sanitation chemicals and floor maintenance products; M. L. Magee, Tom Wade, Joe Murry, Mike Ryan, Don Davies, Ralph Fitzsimons.

Kamen Soap Products New York; soaps and detergents; A. L. Kamen, president; Thos. Knight.

Moore Bros. Co., New York; soap dispensers, Martin J. Peters.

Ox Fiber Brush Co., Frederick, Md.; brushes, cleaning and maintenance products; D. W. Carr, I. B. James, O. J. Rhode, Malcolm McNeill, F. P. Bennett, E. S. Gilson, E. F. Happoldt, M. H. Partridge, G. P. Schick.

Finnell System, Inc., Elkhart, Ind.; electric floor machines, mop trucks, floor maintenance products; Frank L. Greetham J. L. Anderson.

Federal Varnish Co., Chicago; floor finishes and sealers and floor maintenance products; Mal Flanagan, J. H. Lawson, L. C. Harbison, Ray Martin, Glenn E. Doerr.

Norcor Mfg. Co., Green Bay, Wis.; chairs, tables, refuse containers; Sidney Stevens A. G. Maurer, S. E. Ziedler, Mrs. J. P. Whalen.

Hydro-Mist Corp. Glendale, Calif.; vaporizers; N. B. Milton, president.

Clarke Sanding Machine Co., Muskegon, Mich.; floor scrubbing and polishing machines; H. L. Potter, Ernest Cooper, Don Skilleter.

Steiner Sales Co., Chicago; sprayers; V. K. Breininger, J. H. Mayer.

Franklin Metal Products Co., Chicago; sanitary receptacles; Leon Franklin.

Doyle Vacuum Cleaner Co., Grand Rapids, Mich., industrial vacuum cleaners; Dewey I. Doyle, Sr.; Dewey I. Doyle, Jr., Louis Hodgins, Bruce Henderson.

J. A. Meinhardt Co., Chicago; cleaning materials; J. A. Meinhardt, Robt. Larson.

S. M. Arnold, Inc., St. Louis; sponges, chamois, applicator pads, bonnets; S. M. Arnold, Ralph Holemon, Roy Herter, W. McDonough.

Theo. B. Robertson Products Co., Chicago; soaps, cleaners, disinfectants; Theo. B. Robertson, Sr.; Theo. B. Robertson, Jr., R. D. Ferguson.

Baird & McGuire, Inc., St. Louis; sanitary chemicals; James Varley, Jack Varley, James Varley, Jr.; Arthur Hoeller, Gene Thierhof.

Geerpress Wringer Co., Muskegon, Mich.; mopping equipment; Elmer H. Bard, David L. Bard.

Tesco Chemicals, Inc., Atlanta; janitor supplies, soaps, detergents; T. E. Schneider, John Walsh, Ralph Richards, D. P. Willard, Frank de Peterse.

Candy & Co., Chicago; waxes and related products; Robert M. Lockhart, Al. Candy, Jr.

M. B. Hurwitz & Son, Baltimore; mops, wringers, sticks, rope and twine; M. B. Hurwitz, Lew Hurwitz, Jerome A. Hurwitz.

Davies Young Soap Co., Dayton, O.; soaps, waxes, sanitary chemicals; Howard Young, Ed Eckerman, Sam Hauser, Bernard Ramsey, Milton Steverding.

Empire Brush Works, Inc., Port Chester, N. Y.; brushes; Robert J. Wittrock, Harry Zuckerman, W. H. Steen.

Multi-Clean Products, St. Paul; floor and carpet machines, floor finishes; N. H. McRae, E. C. Hesle, Ewin Coulter, Henry Quick, J. McCoy Johnson, Fay Langdon.

Compco, Chicago; sand urns and sifters; S. J. Zagel, L. R. Wrobel, M. E. Unger.

Fuld Bros. Co., Baltimore; sanitary chemicals; Ward M. Glasby, general manager; Jos. Fuld, Louis Eisenberg, Albert Lorch, Frank Holbrook, John Kirby, Irving Morris, Lou M. Caro, John Freese.

Professional Window Cleaners Supply Co., Detroit; squeegees; Jacob Bomze, Ed McIntosh.

United Sponge Co., Chicago; sponges, Joseph H. Schwartz, Miss L. M. Schultz.

Rex Cleanwall Corp., Brazil, Ind.; cleaning machines, rug shampoos, waxes; Ira Englehart.

Winthrop Chemical Co., New York; sanitizing agents; S. E. Parloto, N. J. Stromstad, John Bozman, M. Davis.

Devonshire Chemicals, Inc., Boston; all purpose cleanser.

Hysan Products Co., Chicago; floor maintenance and sanitization products; Henry Brownstein, Harry Brownstein, Franklin Conn.

W. J. McElmoyl Co., Groveville, N. J.; janitor service wagons, baskets, hampers, etc.; Wm. J. McElmoyl.

Hospital Specialty Co., Cleveland; sanitary napkin dispenser; Samuel Todir, James Fillebrown, Louis Emsheimer.

Universal Chlorinator Co., Los Angeles; detergents and disinfecting tablets; Walter E. Bachman, Harry Raff.

Philip Shore & Associates; waste baskets, mop handles, etc.

Bobrick Mfg. Corp., Los Angeles; soap dispensers; Arthur A. Newfield, James A. Puleo.

Mierson Products Co., San Francisco; swing top receptacles; Augusta Mierson, J. L. Baum.

Central Distributors Co., Tyrone, Pa.; drip dispenser fluid and dispenser; T. M. Dougherty.

Schroeder & Tremayne, St. Louis; sponges and chamois; Jack Schroeder, John Vanderhoven.

Rubin Products Co., Kansas City; polishers, scrub mops; J. H. Johnson, Robert H. Johnson.

Tech Soap Co., Chicago; soaps, cleaners and detergents; C. R. Willey, E. F. Rodgers, Geo. M. Case.

Tu-Way Products Co., Detroit; dust mops; O. T. Schaefer, Paul R. Aldridge.

J. A. Schillinger, Madison, Wis.; floor waxes.

Illinois Duster & Brush Co., Chicago; brushes, mops, dusters; Enoch Malmstrom, Oscar Sklar, Emlen Cooper.

White Mop Wringer Co., Fultonville, N. Y.; floor cleaning equipment; L. N. Vedder, Robt. L. Cooley, Wm. E. Butler; Thos. Curtan, Jack Henderson, Homer Sands.

Howard J. Barrett, Philadelphia, janitor's jeep or dolley, expanding bar; H. J. Barrett, John J. Biggins.

Chicago Brush Co., Chicago; brushes; Edward Nathan, Robert Nathan, J. Wallace.

Chemical Mfg. & Distributing Co., Easton, Pa.; soaps, waxes, insecticides, polishes, detergents; Carl Schaad, George Rubert, Chester W. Grodon, Bert Enders, Ed. George, Leslie Caufman.

Oil-Dri Corp. of America, Chicago; oil absorbent; Ted Mannon, L. G. Clark, J. H. Leahy, Eugene Swanson, Nick Jagge, Al. Swerdlik.

American Standard Mfg. Co., Chicago; dust mops, wet mops, wax applicators; Chas. E. Krebs, Walter O. Krebs, J. W. Kohn, E. C. Bolin.

American Sponge & Chamois Co., New York; sponges and chamois; Paul L. Mansell, P. J. Cartolano.

James H. Rhodes & Co., Chicago; sponges, steel wool, chamois, pumice, felts; E. A. Twerdahl, L. Kneebone, J. Jeffers, Jas. Turley, John Sokup.

Hockwald Chemical Co., San Francisco; soaps, chemicals, mop sticks; S. S. Hockwald.

Smyth Mfg. Co., Newark, O.; dust mops.

F. H. Lawson Co., Cincinnati; sand urns, waste receptacle; George Fritz, Jr.; Harold Thiem, E. G. Harvey.

Protecto Products Co., Pomona, Calif.; seat covers and dispenser; Louis Clark, Joe Odell, Harry Voelker.

Sprayer, Duster Folder

An article entitled "Pest Control Equipment," reprinted from the March 1947 issue of *Farm Equipment Retailing* was recently prepared by John F. Benham, secretary, National Sprayer and Duster Association, Chicago.

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PCO Conference at Purdue

More details have come to us regarding the 11th annual pest control operators conference which was reported in "Soap" last month as being held at Purdue University, Lafayette, Ind., April 7-11. The total registration of 195 from 20 states and Canada was somewhat less than in 1946. The sessions on the first day, Monday, April 7, dealt with the fundamentals of entomology. Meetings on the second day dealt entirely with rodent problems and included talks and demonstrations on bait formulations and mixing.

A new feature of field demonstrations on termite control was included in the Wednesday session, all day being given over to termites and other wood-infesting insects. Wednesday evening featured operator interviews, these being interviews of operator sales and consumer resistance. Thursday morning included discussions of new insecticides by authorities as follows: Hexachlorocyclohexane, Carl W. Peterson of Du Pont; chlordane, W. E. MacCauley, Julius Hyman & Co.; chlorinated terpene hydrocarbon, E. N. Woodbury, Hercules Powder Co.; piperonyl cyclohexenone and piperonyl butoxide, William Dickison, Dodge & Olcott; and DDT by George E. Gould, Purdue. A resumé of new insecticides was given by L. S. Henderson of the Bureau of Entomology and Plant Qurantine, USDA.

The annual dinner was held Thursday evening and the featured speakers were U. C. Freeman, associate dean of the school of agriculture, Purdue; J. Harvey Sturgeon and William O. Buettner, president and secretary respectively, NPCA. The conference concluded its program Friday morning with a talk by Willis N. Bruce, Illinois Natural History Survey, Urbana, Ill., on the subject, "Comparative Residual Toxicity of New Organic Chemicals." This was followed by a discussion, "Flies of Importance in Barn Spraying", by J. J. Davis of Purdue, and an explanation and demonstration of barn spraying with DDT by Virgil R. Knapp, Entomological Service and Supply Co., Zionsville, Ind., and an explanation and demonstration of weed control with 2,4-D by O. C. Lee, weed specialist of Purdue.

MM&R Advances Mehren

G. F. Mehren of the sales staff of Magnus, Mabee & Reynard, Inc., New York, was appointed general manager of the firm's mid-western area in mid-April. Prior to his appointment, Dr. Mehren was for nine years a member of MM&R's mid-western sales staff servicing accounts in Minnesota, Wisconsin, northern Illinois and part of Chicago. Prior to his association with MM&R he was Chicago district sales manager of the medicinal department of Frankfort Distilleries.

G. F. MEHREN

New Aerosol Sprayer

A new aerosol sprayer, the "Fogmiser," is being manufactured by World Industries, Inc., Dallas, to retail for about $1.50. The new product is precision made of non-corrosive metals It produces a fog-like mist spray by a six-inch stroke of the plunger. The "Fogmiser" is seven and one-half inches long, weighs five ounces and has a screw cap that will fit either the standard bottle or tin container.

Lawson Back from Florida

John H. Lawson and wife returned on April 14th from a five weeks vacation at the Lauderdale Beach Hotel, Fort Lauderdale, Florida. Mr. Lawson is executive vice-president of Federal Varnish division of Enterprise Paint Co., Chicago, which manufactures floor waxes, sealers, and maintenance materials.

"Charo" Reintroduced

"Charo" a refrigerator deodorizer, manufactured by Requa Mfg. Co., Inc., 1193 Atlantic Ave., Brooklyn 16, N. Y., is back on the market, the company has announced.

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Every effort is made to keep this index free of errors, but no responsibility is assumed for any omissions.

"Did yo' all hab any particular bird in mind, Cuthbert?"

Flock Shooter?

A FLOCK shooter is a hunter who shoots at the whole flock and usually hits nothing, — instead of picking out one bird at a time. Flock shooters are like some advertisers who try to cover too many fields through one advertising medium, and who mostly fail to make a dent on any one. Specific and selective advertising, like correct shooting, usually pays off.

If, for example, you want to advertise to the field of soaps and detergents, household insecticides, disinfectants, floor waxes, and allied chemical specialties, the most concentrated and selective circulation as well as maximum reader interest may be secured through the pages of

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254 WEST 31st STREET NEW YORK 1

Tale Ends

CORRECTION DEPT.—News item in our March issue that USDA received bids for 18,000 lbs. of DDT at $42 and $38.25 was an error of omission. Just the mere detail that this was for a 50% wettable powder, *not* technical DDT. What a lot of excitement a small news item can cause. And did we catch hell!

* * *

Anybody want to sell a nice soap factory? There are still a lot more people with money who want to buy their way into the soap business via purchase of a soap plant than there are factory owners who want to sell out. And are these bloated plutocrats, oozing money from every pocket, afraid of synthetic detergent competition? Not a whit! Don't snicker, gentle reader, but most of them probably never even heard of a synthetic detergent.

* * *

Our toilet soap cracks, recently wrote a small soaper, what shall we do? So, we told him what to do. Next day in comes another letter from another soaper with the same complaint, toilet soap cracking. And the formula, temperatures, moisture of the second complaint were just about identical with that which we had suggested to the first soaper to *stop* cracking. We are now figuring out what to tell this second bloke. Or maybe somebody is kidding us?

* * *

A fellow who had just bought 90,000 gals. of surplus government insect spray dropped in to see us recently, and inadvertently find out where he can get rid of this stuff. We suggested shipment to South America, China or Iceland on consignment. Although we thought of mentioning its possibilities as a fuel, we charitably refrained.

* * *

What do you suppose ever happened to that "old subscriber" who used to send us an anonymous postcard every time we mispelled bedbug? Each time we spelled it "bed bug,"—as two words,—he would remind us that it should be "bedbug,"—one word.